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ABSTRACT

This booklet contains excerpts of the training-related requirements of the standards promulgated by the Occupational Safety and Health Administration (OSHA). It is designed as an aid for employers, safety and health professionals, and others who need to know training requirements. (References to training may be difficult to locate in the long and complex OSHA standards.) The booklet contains training requirements for general industry, maritime occupations, the construction industry, and agriculture. It also contains a list of suggested readings in industrial safety and health training, a guide to OSHA training materials (films, slides, print), and a list of OSHA regional offices. (KC)

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Training Requirements in OSHA Standards

ED193462

U.S. Department of Labor
Ray Marshall, Secretary

Occupational Safety and Health Administration
Eula Bingham, Assistant Secretary

CE 026 759

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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This publication is intended to serve as an aid for those interested in the training of employees. It is not to be considered a substitute for any provisions of the Occupational Safety and Health Act of 1970 or for any rules or standards issued by the Occupational Safety and Health Administration.

This booklet supersedes the February 1976 publication, Training Requirements of OSHA Standards (OSHA 2254). Additional single free copies are available from the OSHA Publications Office, U.S. Department of Labor, Room S1212, 200 Constitution Ave., N.W., Washington, DC 20210. Material contained here is in the public domain and may be reproduced without permission; source credit is requested but not required.

These training-related standards were excerpted and compiled by Robert A. Winters in OSHA's Office of Training and Education.

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Introduction

Many standards promulgated by the Occupational Safety and Health Administration (OSHA) explicitly require the employer to train employees in the safety and health aspects of their jobs. Other OSHA standards make it the employer's responsibility to limit certain job assignments to employees who are "certified," "competent," or "qualified"—meaning that they have had special previous training, in or out of the workplace. These requirements reflect OSHA's belief that training is an essential part of every employer's program for protecting workers from accidents and illnesses. Many researchers conclude that those who are new on the job have a higher rate of accidents and injuries than more experienced workers. If ignorance of specific job hazards and of proper work practices is even partly to blame for this higher injury rate, then training may help to provide a solution.

The length and complexity of OSHA standards may make it difficult to find all the references to training. So, to help employers, safety and health professionals, and others with a need to know, OSHA's training-related requirements have been excerpted and collected in this booklet. Requirements for posting information, warning signs, labels, and the like are excluded, as are most references to the qualifications of people assigned to test workplace conditions or equipment.

It is usually a good idea for the employer to keep a record of all safety and health training. Records can provide evidence of the employer's good faith and compliance with OSHA standards. Documentation can also supply an answer to one of the first questions an accident investigator will ask: "Was the injured employee trained to do the job?"

Training in the proper performance of a job is time and money well spent, and the employer might regard it as an investment rather than an expense. An effective program of safety and health training for workers can result in fewer accidents and illnesses, better morale, and lower insurance premiums, among other benefits.

Readers with questions concerning worker safety and health training should contact their OSHA Regional Office (see page 62).

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General Industry Training Requirements

The following training requirements have been excerpted from Part 1910 of Title 29, Code of Federal Regulations. Note that additional training requirements may appear in certain other standards (ANSI, NFPA, etc.) adopted by reference in Part 1910 and therefore mandatory.

Subject and Standard Number	Training Requirement
MANLIFTS	
1910.68(e)(1)	(e) Periodic inspection. (1) Frequency. All manlifts shall be inspected by a competent designated person at intervals of not more than 30 days. Limit switches shall be checked weekly. Manlifts found to be unsafe shall not be operated until properly repaired.
VENTILATION	
1910.94(d)(9)(i) and (vi)	(d) Open surface tanks. (9) Personal protection. (i) All employees working in and around open-surface tank operations must be instructed as to the hazards of their respective jobs, and in the personal protection and first aid procedures applicable to these hazards. (vi) . . . Respirators shall be approved by the U.S. Bureau of Mines, U.S. Department of the Interior [see 30 CFR Part II] and shall be selected by a competent industrial hygienist or other technically qualified source. Respirators shall be used in accordance with §1910.134, and persons who may require them shall be trained in their use.
1910.94(d)(11)(v) and (vi)	(11) Inspection, maintenance, and installation. (v) If, in emergencies, such as rescue work, it is necessary to enter a tank which may contain a hazardous atmosphere, suitable respirators, such as self-contained breathing apparatus; hose mask with blower, if there is a possibility of oxygen deficiency; or a gas mask, selected and operated in accordance with paragraph (d)(9)(vi) of this section, shall be used. If a contaminant in the tank can cause dermatitis, or be absorbed through the skin, the employee entering the tank shall also wear protective clothing. At least one trained standby employee, with suitable respirator, shall be present in the nearest uncontaminated area. The standby employee must be able to communicate with the employee in the tank and be able to haul him out of the tank with a lifeline if necessary. (vi) Maintenance work requiring welding or open flame, where toxic metal fumes such as cadmium, chromium, or lead may be evolved, shall be done only with sufficient local exhaust ventilation to prevent the creation of a health hazard, or be done with respirators selected and used in accordance with subparagraph (9)(vi) of this paragraph. Welding, or the use of open flames near any solvent cleaning equipment shall be permitted only after such equipment has first been thoroughly cleared of solvents and vapors.

IONIZING RADIATION

1910.96(f)(3)(viii) (f) Immediate evacuation warning signal. (3) Testing.

(viii) All employees whose work may necessitate their presence in an area covered by the signal shall be made familiar with the actual sound of the signal—preferably as it sounds at their work location. Before placing the system into operation, all employees normally working in the area shall be made acquainted with the signal by actual demonstration at their work locations.

1910.96(i)(2) (i) Instruction of personnel, posting.

(2) All individuals working in or frequenting any portion of a radiation area shall be informed of the occurrence of radioactive materials or of radiation in such portions of the radiation area; shall be instructed in the safety problems associated with exposure to such materials or radiation and in precautions or devices to minimize exposure; shall be instructed in the applicable provisions of this section for the protection of employees from exposure to radiation or radioactive materials; and shall be advised of reports of radiation exposure which employees may request pursuant to the regulations in this section.

HYDROGEN

1910.103(c)(4)(ii) (c) Liquefied hydrogen systems. (4) Operating instructions.

(ii) Attendant. A qualified person shall be in attendance at all times while the mobile hydrogen supply unit is being unloaded.

FLAMMABLE AND COMBUSTIBLE LIQUIDS

1910.106(b)(5)(vi)(v) (2) and (3) (b) Tank storage. (5) Supports, foundations, and anchorage for all tank locations. (vi) Flood areas. (v) Inspections.

(2) That detailed printed instructions of what to do in flood emergencies are properly posted.

(3) That station operators and other employees depended upon to carry out such instructions are thoroughly informed as to the location and operation of such valves and other equipment necessary to effect these requirements.

EXPLOSIVES AND BLASTING AGENTS

1910.109(d)(1)(iii) (d) Transportation of explosives. (1) General provisions.

(iii) Explosives shall not be transferred from one vehicle to another within the confines of any jurisdiction (city, county, State, or other area) without informing the fire and police departments thereof. In the event of breakdown or collision the local fire and police departments shall be promptly notified to help safeguard such emergencies. Explosives shall be transferred from the disabled vehicle to another only when proper and qualified supervision is provided.

1910.109(d)(2)(iii)(b) (2) Transportation vehicles.

(iii) (b) Extinguishers shall be filled and ready for immediate use and located near the driver's seat. Extinguishers shall be examined periodically by a competent person.

1910.109(d)(3)(i) (3) Operation of transportation vehicles.

(i) Vehicles transporting explosives shall only be driven by and be in the charge of a driver who is familiar with the traffic regulations, State laws, and the provisions of this section.

1910.109(d)(3)(iii) (iii) Every motor vehicle transporting any quantity of Class A or Class B explosives shall, at all times, be attended by a driver or other attendant of the motor carrier. This attendant shall have been made aware of the class of the explosive material in the vehicle and of its inherent dangers, and shall have been instructed in the measures and procedures to be followed in order to protect the public from those dangers. He shall have been made familiar with the vehicle he is assigned, and shall be trained, supplied with the necessary means, and authorized to move the vehicle when required.

1910.109(g)(3)(iii)(a)

(g) Blasting agents.

(3) Bulk delivery and mixing vehicles.

(iii)(a) The operator shall be trained in the safe operation of the vehicle together with its mixing, conveying, and related equipment. The employer shall assure that the operator is familiar with the commodities being delivered and the general procedure for handling emergency situations.

1910.109(g)(3)(iv)(c)

(iv) (c) A qualified person shall evaluate all systems to determine if they will adequately dissipate static under potential field conditions.

1910.109(g)(5)(vii)

(5) Storage of blasting agents and supplies.

(vii) Every warehouse used for the storage of blasting agents shall be under the supervision of a competent person.

1910.109(g)(6)(ii)

(6) Transportation of packaged blasting agents.

(ii) Vehicles transporting blasting agents shall only be driven by and be in charge of a driver in possession of a valid motor vehicle operator's license. Such a person shall also be familiar with the States vehicle and traffic laws.

1910.109(h)(4)(i)(a)

(h) Water gel (Slurry) explosives and blasting agents. (4) Bulk delivery and mixing vehicles.

(i) (a) Vehicles used over public highways for the bulk transportation of water gels or of ingredients classified as dangerous commodities shall meet the requirements of the Department of Transportation and shall meet the requirements of paragraphs (d) and (g)(6) of this section.

STORAGE AND HANDLING OF LIQUEFIED PETROLEUM GASES

1910.110(b)(16)

(b) Basic rules.

(16) Instructions. Personnel performing installation, removal, operation, and maintenance work shall be properly trained in such function.

1910.110(d)(12)(i)

(d) Systems utilizing containers other than DOT containers. (12) General provisions applicable to systems in industrial plants (of 2,000 gallons water capacity and more) and to bulk filling plants.

(i) When standard watch service is provided, it shall be extended to the LP-Gas installation and personnel properly trained.

1910.110(h)(11)(vii)

(h) Liquefied petroleum gas service stations. (11) Dispensing devices.

(vii) The dispensing of LP-Gas into the fuel container of a vehicle shall be performed by a competent attendant who shall remain at the LP-Gas dispenser during the entire transfer operation.

STORAGE AND HANDLING OF ANHYDROUS AMMONIA

1910.111(b)(1)(iv)

(b) Basic rules. (1) Approval of equipment and systems.

(iv) It is a custom-designed and custom-built unit, which no nationally recognized testing laboratory, or Federal, State, municipal or local authority responsible for the enforcement of a Federal, State, municipal, or local law, code or regulation pertaining to the storage, transportation and use of anhydrous ammonia is willing to undertake to accept, certify, list, label or determine to be safe, and the employer has on file a document attesting to its safe condition following the conduct of appropriate tests. The document shall be signed by a registered professional engineer or other person having special training or experience sufficient to permit him to form an opinion as to safety of the unit involved. The document shall set forth the test bases, test data and results, and also the qualifications of the certifying person.

1910.111(b)(10)(i)

(10) General.

(i) Personnel required to handle ammonia should be trained in safe operating practices and in the proper action to take in the event of emergencies.

1910.111(b)(13)(ii)

(13) Tank car unloading points and operations.

(ii) The employer shall insure that unloading operations are performed by reliable persons properly instructed and given the authority to monitor careful compliance with all applicable procedures.

RESPIRATORY PROTECTION

1910.134(a)(3)

(a) Permissible practice.

(3) The employee shall use the provided respiratory protection in accordance with instructions and training received.

1910.134(b)(3)

(b) Requirements for a minimal acceptable program.

(3) The user shall be instructed and trained in the proper use of respirators and their limitations.

1910.134(e)(2), (3), (4), and (5)(i)

(e) Use of respirators.

(2) The correct respirator shall be specified for each job. The respirator type is usually specified in the work procedures by a qualified individual supervising the respiratory protective program. The individual issuing them shall be adequately instructed to insure that the correct respirator is issued. Each respirator permanently assigned to an individual should be durably marked to indicate to whom it was assigned. This mark shall not affect the respirator performance in any way. The date of issuance should be recorded.

(3) Written procedures shall be prepared covering safe use of respirators in dangerous atmospheres that might be encountered in normal operations or in emergencies. Personnel shall be familiar with these procedures and the available respirators.

(4) Respiratory protection is no better than the respirator in use, even though it is worn conscientiously. Frequent random inspections shall be conducted by a qualified individual to assure that respirators are properly selected, used, cleaned, and maintained.

(5) For safe use of any respirator, it is essential that the user be properly instructed in its selection, use, and maintenance. Both supervisors and workers shall be so instructed by competent persons. Training shall provide the men an opportunity to handle the respirator, have it fitted properly, test its face-piece-to-face seal, wear it in normal air for a long familiarity period, and, finally, to wear it in a test atmosphere.

(i) Every respirator wearer shall receive fitting instructions including demonstrations and practice in how the respirator should be worn, how to adjust it, and how to determine if it fits properly. Respirators shall not be worn when conditions prevent a good face seal. Such conditions may be a growth of beard, sideburns, a skull cap that projects under the facepiece, or temple pieces on glasses. Also, the absence of one or both dentures can seriously affect the fit of a facepiece. The worker's diligence in observing these factors shall be evaluated by periodic check. To assure proper protection, the facepiece fit shall be checked by the wearer each time he puts on the respirator. This may be done by following the manufacturer's facepiece fitting instructions.

TEMPORARY LABOR CAMPS

1910.142(k)(1) and (2)

(k) First aid.

(1) Adequate first aid facilities approved by a health authority shall be maintained and made available in every labor camp for the emergency treatment of injured persons.

(2) Such facilities shall be in charge of a person trained to administer first aid and shall be readily accessible for use at all times.

SPECIFICATIONS FOR ACCIDENT PREVENTION SIGNS AND TAGS

1910.145(c)(1)(ii), (2)(ii) and (3)

(c) Classification of signs according to use. (1) Danger signs.

(ii) All employees shall be instructed that danger signs indicate immediate danger and that special precautions are necessary.

(2) Caution signs.

(ii) All employees shall be instructed that caution signs indicate a possible hazard against which proper precautions should be taken.

(3) Safety instruction signs. Safety instruction signs shall be used where there is a need for general instructions and suggestions relative to safety measures.

MEDICAL SERVICES AND FIRST AID

1910.151(a) and (b)

(a) The employer shall insure the ready availability of medical personnel for advice and consultation on matters of plant health.

(b) In the absence of an infirmary, clinic, or hospital in near proximity to the workplace which is used for the treatment of all injured employees, a person or persons shall be adequately trained to render first aid. First aid supplies approved by the consulting physician shall be readily available.

FIXED DRY CHEMICAL EXTINGUISHING SYSTEMS

1910.160(c)(1)(i) and (iv)

(c) Inspection and maintenance. (1) Inspection and tests.

(i) At least annually, all dry chemical systems including alarms, shutdowns, and other associated equipment, shall be thoroughly inspected and checked for proper operation by a competent inspector.

(iv) Between the regular annual inspection or tests, the system shall be inspected visually or otherwise by competent personnel, following a predetermined schedule.

CARBON DIOXIDE EXTINGUISHING SYSTEMS

1910.161(a)(2)

(a) General requirements.

(2) Safety requirements. In any use of carbon dioxide where there is a possibility that employees may be trapped in or enter into atmospheres made hazardous by a carbon dioxide discharge, suitable safeguards shall be provided to insure prompt evacuation of and to prevent entry into such atmospheres and also to provide means for prompt rescue of any trapped personnel. Such safety items as personnel training, warning signs, discharge alarms, predischarge alarms and breathing apparatus shall be considered.

1910.161(b)(1)(i) and (iv)

(b) Inspection and maintenance. (1) Inspection and tests.

(i) At least annually, all carbon dioxide systems shall be thoroughly inspected and tested for proper operation by a competent engineer or inspector.

(iv) Between the regular service contract inspection or tests, the system shall be inspected visually or otherwise by competent personnel, following a schedule.

1910.161(b)(2)(ii)

(2) Maintenance.

(ii) Any troubles or impairments shall be corrected at once by competent personnel.

LOCAL FIRE ALARM SIGNALING SYSTEMS

.1910.163(c)

(c) Maintenance. All systems shall be under the supervision of qualified persons. These persons shall cause tests and inspections to be made at weekly intervals, and shall have general charge of all alterations and additions to the systems under their supervision.

SAFETY RELIEF DEVICES FOR CARGO AND PORTABLE TANKS STORING COMPRESSED GASES

1910.168(b)(4)(ii)

(b) General requirements. (4) Maintenance requirements for safety relief devices.

(ii) Only qualified personnel shall be allowed to service safety relief devices. Any servicing or repairs which require resetting of safety relief valves shall be done only by or after consultation with the valve manufacturer.

POWERED INDUSTRIAL TRUCKS

1910.178(l)

(l) Operator training. Only trained and authorized operators shall be permitted to operate a powered industrial truck. Methods shall be devised to train operators in the safe operation of powered industrial trucks.

OVERHEAD AND GANTRY CRANES

1910.179(b)(8)

(b) General requirements.

(8) Designated personnel. Only designated personnel shall be permitted to operate a crane covered by this section. [N.B.: "Designated" means selected or assigned by the employer or the employer's representative as being qualified to perform specific duties.]

1910.179(l)(3)(i) and (iii)(a)

(l) Maintenance. (3) Adjustments and repairs.

(i) Any unsafe conditions disclosed by the inspection requirements of paragraph (j) of this section shall be corrected before operation of the crane is resumed. Adjustments and repairs shall be done only by designated personnel. [N.B.: "Designated" means selected or assigned by the employer or the employer's representative as being qualified to perform specific duties.]

(iii)(a) Crane hooks showing defects described in paragraph (j)(2)(iii) of this section shall be discarded. Repairs by welding or reshaping are not generally recommended. If such repairs are attempted they shall only be done under competent supervision and the hook shall be tested to the load requirements of paragraph (k)(2) of this section before further use.

1910.179(n)(3)(ix)

(n) Handling the load. (3) Moving the load.

(ix) When two or more cranes are used to lift a load one qualified responsible person shall be in charge of the operation. He shall analyze the operation and instruct all personnel involved in the proper positioning, rigging of the load, and the movements to be made.

1910.179(o)(3)

(o) Other requirements.

(3) Fire extinguishers. The employer shall insure that operators are familiar with the operation and care of fire extinguishers provided.

CRAWLER LOCOMOTIVE AND TRUCK CRANES

1910.180(b)(3)

(b) General requirements.

(3) Designated personnel. Only designated personnel shall be permitted to operate a crane covered by this section. [N.B.: "Designated" means selected or assigned by the employer or the employer's representative as being qualified to perform specific duties.]

1910.180(h)(3)(xii)

(h) Handling the load. (3) Moving the load.

(xii) When two or more cranes are used to lift one load, one designated person shall be responsible for the operation. He shall be required to analyze the operation and instruct all personnel involved in the proper positioning, rigging of the load, and the movements to be made.

1910.180(l)(5)(ii)

(i) Other requirements. (5) Fire extinguishers.

(ii) Operating and maintenance personnel shall be made familiar with the use and care of the fire extinguishers provided.

DERRICKS

1910.181(b)(3)

(b) General requirements.

(3) Designated personnel. Only designated personnel shall be permitted to operate a derrick covered by this section. [N.B.: ''Designated'' means selected or assigned by the employer or employer's representative as being qualified to perform specific duties.]

1910.181(h)

(h) Operations of derricks. Derrick operations shall be directed only by the individual specifically designated for that purpose. [N.B.: ''Designated'' means selected or assigned by the employer or employer's representative as being qualified to perform specific duties.]

1910.181(j)(3)(ii)

(j) Other requirements. (3) Fire extinguishers.

(ii) Operating and maintenance personnel shall be familiar with the use and care of the fire extinguishers provided.

SLINGS

1910.184(d)

(d) Inspections. Each day before being used, the sling and all fastenings and attachments shall be inspected for damage or defects by a competent person designated by the employer. Additional inspections shall be performed during sling use, where service conditions warrant. Damaged or defective slings shall be immediately removed from service. [N.B.: ''Designated'' means selected or assigned by the employer or employer's representative as being qualified to perform specific duties.]

1910.184(e)(3)(iii)

(e) Alloy steel chain slings. (3) Inspections.

(iii) The thorough inspection of alloy steel chain slings shall be performed by a competent person designated by the employer, and shall include a thorough inspection for wear, defective welds, deformation and increase in length. Where such defects or deterioration are present, the sling shall be immediately removed from service.

WOODWORKING MACHINERY REQUIREMENTS

1910.213(s)(5)

(s) Inspection and maintenance of woodworking machinery.

(5) Sharpening or tensioning of saw blades or cutters shall be done only by persons of demonstrated skill in this kind of work.

MECHANICAL POWER PRESSES

1910.217(e)(3)

(e) Inspection, maintenance, and modification of presses.

(3) Training of maintenance personnel. It shall be the responsibility of the employer to insure the original and continuing competence of personnel caring for, inspecting, and maintaining power presses.

1910.217(f)(2)

(f) Operation of power presses.

(2) Instruction to operators. The employer shall train and instruct the operator in the safe method of work before starting work on any operation covered by this section. The employer shall insure by adequate supervision that correct operating procedures are being followed.

FORGING MACHINES

1910.218(a)(2) and (iii)

(a) General requirements.

(2) Inspection and maintenance. It shall be the responsibility of the employer to maintain all forge shop equipment in a condition which will insure continued safe operation. This responsibility includes:

(iii) Training personnel for the proper inspection and maintenance of forging machinery and equipment.

WELDING, CUTTING, AND BRAZING

1910.252(b)(1)(iii)

(b) Application, installation, and operation of arc welding and cutting equipment. (1) General.

(iii) Instruction. Workmen designated to operate arc welding equipment shall have been properly instructed and qualified to operate such equipment as specified in subparagraph (4) of this paragraph.

1910.252(b)(4)(i) and (ix)(a)

(4) Operation and maintenance.

(i) General. Workmen assigned to operate or maintain arc welding equipment shall be acquainted with the requirements of subparagraphs (b), (d), (e), and (f) of this section; if doing gas-shielded arc welding, also Recommended Safe Practices for Gas-Shielded Arc Welding, A6.1–1966, American Welding Society.

(ix) Maintenance.

(a) The operator should report any equipment defect or safety hazard to his supervisor and the use of the equipment shall be discontinued until its safety has been assured. Repairs shall be made only by qualified personnel.

1910.252(c)(1)(i) and (iii)

(c) Installation and operation of resistance welding equipment. (1) General.

(i) Installation. All equipment shall be installed by a qualified electrician in conformance with Subpart S of this part. There shall be a safety-type disconnecting switch or a circuit breaker or circuit interrupter to open each power circuit to the machine, conveniently located at or near the machine, so that the power can be shut off when the machine or its controls are to be serviced.

(iii) Personnel. Workmen designated to operate resistance welding equipment shall have been properly instructed and judged competent to operate such equipment.

1910.252(c)(6)

(6) Maintenance. Periodic inspection shall be made by qualified maintenance personnel, and records of the same maintained. The operator shall be instructed to report any equipment defects to his supervisor and the use of the equipment shall be discontinued until safety repairs have been completed.

1910.252(d)(2)(iii)(b)

(d) Fire prevention and protection. (2) Special precautions. (iii) Fire watch.

(b) Fire watchers shall have fire extinguishing equipment readily available and be trained in its use. They shall be familiar with facilities for sounding an alarm in the event of a fire. They shall watch for fire in all exposed areas, try to extinguish them only when obviously within the capacity of the equipment available, or otherwise sound the alarm. A fire watch shall be maintained for at least a half hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires.

1910.252(d)(2)(xiii)(c)

(xiii) Management.

(c) Insist that cutters or welders and their supervisors are suitably trained in the safe operation of their equipment and the safe use of the process.

1910.252(f)(13)

(f) Health protection and ventilation.

(13) First-aid equipment. First-aid equipment shall be available at all times. On every shift of welding operations there should be present employees trained to render first aid. All injuries shall be reported as soon as possible for medical attention. First aid shall be rendered until medical attention can be provided.

PULP, PAPER, AND PAPERBOARD MILLS

1910.261(h)(3)(ii)

(h) Bleaching. (3) Liquid chlorine.

(ii) Gas masks capable of absorbing chlorine shall be supplied, conveniently placed, and regularly inspected, and workers who may be exposed to chlorine gas shall be instructed in their use.

LAUNDRY MACHINERY AND OPERATIONS

1910.264(d)(1)(v)

(d) Operating rules. (1) General.

(v) Instruction of employees. Employees shall be properly instructed as to the hazards of their work and be instructed in safe practices, by bulletins, printed rules, and verbal instructions.

SAWMILLS

1910.265(c)(30)(x)

(c) Building facilities, and isolated equipment. (30) Vehicles.

(x) Lift trucks. Lift trucks shall be designed, constructed, maintained, and operated in accordance with the requirements of §1910.178. [Only trained and authorized operators shall be permitted to operate a powered industrial truck. Methods shall be devised to train operators in the safe operation of powered industrial trucks.]

PULPWOOD LOGGING

1910.266(c)(5)(i) and (ii)

(c) General requirements. (5) Chain saw operations.

(i) Chain saw operators shall be instructed to inspect the saws daily to assure that all handles and guards are in place and tight, that all controls function properly, and that the muffler is operative.

(ii) Chain saw operators shall be instructed to follow manufacturer's instructions as to operation adjustment.

1910.266(c)(6)(i), (vi), (vii), (ix), (x), and (xiii) through (xxi)

(6) Stationary and mobile equipment operation.

(i) Equipment operators shall be instructed as to the manufacturer's recommendations for equipment operation, maintenance, safe practices, and site operating procedures.

(vi) The equipment operator shall be instructed to walk completely around machine and assure that no obstacles or personnel are in the area before startup.

(vii) The equipment operator shall be instructed to start and operate equipment only from the operator's station or from safe area recommended by the manufacturer.

(ix) The equipment operator shall be instructed to check all controls or proper function and response before starting working cycle.

(x) The equipment operator shall be instructed to ground or secure all movable elements when not in use.

(xiii) The equipment operator shall be instructed to maintain adequate distance from other equipment and personnel.

(xiv) Where signalmen are used, the equipment operator shall be instructed to operate the equipment only on signal from the designated signalman and only when signal is distinct and clearly understood.

(xv) The equipment operator shall be instructed not to operate movable elements (boom, grapple, load, etc.) close to or over personnel.

(xvi) The equipment operator shall be instructed to signal his intention before operation when personnel are in or near the working area.

(xvii) The equipment operator shall be instructed to dismount and stand clear for all loading and unloading of his mobile vehicle by other mobile equipment. The dismounted operator shall be visible to loader operator.

(xviii) The equipment operator shall be instructed to operate equipment in a manner that will not place undue shock loads on wire rope.

(xix) The equipment operator shall be instructed not to permit riders or observers on the machine unless approved seating and protection is provided.

(xx) The equipment operator shall be instructed to shut down the engine when the equipment is stopped, apply brake locks and ground moving elements before he dismounts.

(xxi) The equipment operator shall be instructed, when any equipment is transported from one job location to another, to transport it on a vehicle of sufficient rated capacity and the equipment shall be properly secured during transit.

1910.266(c)(7)

(7) Explosives. Only trained and experienced personnel shall handle or use explosives. Usage shall comply with the requirements of § 1910.109.

1910.266(e)(2)(i) and (ii)

(e) Pulpwood harvesting. (2) Manual felling.

(i) The feller shall be instructed to plan retreat path and clear path as necessary before cut is started.

(ii) The feller shall be instructed to appraise situation for dead limbs, the lean of tree to be cut, wind conditions, location of other trees and other hazards and exercise proper precautions before cut is started.

TELECOMMUNICATIONS

1910.268(c)

(c) Training. Employers shall provide training in the various precautions and safe practices described in this section and shall insure that employees do not engage in the activities to which this section applies until such employees have received proper training in the various precautions and safe practices required by this section. However, where the employer can demonstrate that an employee is already trained in the precautions and safe practices required by this section prior to his employment, training need not be provided to that employee in accordance with this section. Where training is required, it shall consist of on-the-job training or classroom-type training or a combination of both. The training program shall include a list of the subject courses and the types of personnel required to receive such instruction. A written description of the training program and a record of employees who have received such training shall be maintained for the duration of the employee's employment and shall be made available upon request to the Assistant Secretary for Occupational Safety and Health. Such training shall, where appropriate, include the following subjects:

(1) Recognition and avoidance of dangers relating to encounters with harmful substances, and animal, insect, or plant life.

(2) Procedures to be followed in emergency situations, and

(3) First aid training, including instruction in artificial respiration.

1910.268(g)(3)(ii) and (iii)

(g) Personal climbing equipment. (3) Pole climbers.

(ii) The employer shall ensure that pole climbers are inspected by a competent person for the following conditions: Fractured or cracked gaffs or leg irons, loose or dull gaffs, broken straps or buckles. If any of these conditions exist, the defect shall be corrected before the climbers are used.

(iii) Pole climbers shall be inspected as required in this paragraph (g)(3) before each day's use and a gaff cut-out test performed at least weekly when in use.

1910.268(h)(1)

(h) Ladders.

(1) The employer shall ensure that no employee nor any material or equipment may be supported or permitted to be supported on any portion of a ladder unless it is first determined, by inspections and checks conducted by a competent person, that such ladder is adequately strong, in good condition, and properly secured in place, as required in Subpart D of this part and as required in this section.

1910.268(j)(1)

(j) Vehicle-mounted material handling devices and other mechanical equipment. (1) General.

(i) The employer shall ensure that visual inspections are made of the equipment by a competent person each day the equipment is to be used to ascertain that it is in good condition.

(ii) The employer shall ensure that tests shall be made at the beginning of each shift by a competent person to insure the vehicle brakes and operating systems are in proper working condition.

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1910.268(j)(4)(iv)(D) and (F)

(4) Derrick trucks and similar equipment.

(iv)(D) Only persons trained in the operation of the derrick shall be permitted to operate the derrick.

(F) The employer shall ensure that the derrick and its associated equipment are inspected by a competent person at intervals set by the manufacturer but in no case less than once per year. Records shall be maintained including the dates of inspections, and necessary repairs made, if corrective action was required.

1910.268(l)(1)

(l) Cable fault locating and testing.

(1) Employees involved in using high voltages to locate trouble or test cables shall be instructed in the precautions necessary for their own safety, and the safety of other employees.

1910.268(o)(1), (ii), and (3)

(o) Underground lines. (1) Guarding manholes and street openings.

(ii) While work is being performed in the manhole, a person with basic first aid training shall be immediately available to render assistance if there is cause for believing that a safety hazard exists, and if the requirements contained in paragraphs (d) (1) and (o) (1) (i) of this section do not adequately protect the employee(s). Examples of manhole worksite hazards which shall be considered to constitute a safety hazard include, but are not limited to:

(A) Manhole worksites where safety hazards are created by traffic patterns that cannot be corrected by provisions of paragraph (d)(1) of this section.

(B) Manhole worksites that are subject to unusual water hazards that cannot be abated by conventional means.

(C) Manhole worksites that are occupied jointly with power utilities as described in paragraph (o)(3) of this section.

(3) Joint power and telecommunication manholes. While work is being performed in a manhole occupied jointly by an electric utility and a telecommunication utility, an employee with basic first aid training shall be available in the immediate vicinity to render emergency assistance as may be required. The employee whose presence is required in the immediate vicinity for the purposes of rendering emergency assistance is not to be precluded from occasionally entering a manhole to provide assistance other than in an emergency. The requirement of this paragraph (o)(3) does not preclude a qualified employee [any worker who by reason of his training and experience has demonstrated his ability to safely perform his duties], working alone, from entering for brief periods of time, a manhole where energized cables or equipment are in service, for the purpose of inspection, housekeeping, taking readings, or similar work if such work can be performed safely.

1910.268(q)(1)(ii)(A) through (D)

(q) Tree trimming—electrical hazards. (1) General.

(ii) Employees engaged in line-clearing operations shall be instructed that:

(A) A direct contact is made when any part of the body touches or contacts an energized conductor, or other energized electrical fixture or apparatus.

(B) An indirect contact is made when any part of the body touches any object in contact with an energized electrical conductor, or other energized fixture or apparatus.

(C) An indirect contact can be made through conductive tools, tree branches, trucks, equipment, or other objects, or as a result of communications wires, cables, fences, or guy wires being accidentally energized.

(D) Electric shock will occur when an employee, by either direct or indirect contact with an energized conductor, energized tree limb, tools, equipment, or other object, provides a path for the flow of electricity to a grounded object or to the ground itself. Simultaneous contact with two energized conductors will also cause electric shock which may result in serious or fatal injury.

1910.268(q)(2)(ii), (iii), and (iv)

(2) Working in proximity to electrical hazards.

(ii) Only qualified employees [any worker who by reason of his training and experience has demonstrated his ability to safely perform his duties] or trainees, familiar with the special techniques and hazards involved in line clearance, shall be permitted to perform the work if it is found that an electrical hazard exists.

(iii) During all tree working operations aloft where an electrical hazard of more than 750V exists, there shall be a second employee [a tree worker who through related training and on-the-job experience is familiar with the special techniques and hazards involved in line clearance] or trainee qualified in line clearance tree trimming [any worker regularly assigned to a line-clearance tree-trimming crew and undergoing on-the-job training who, in the course of such training, has demonstrated his ability to perform his duties safely at his level of training] within normal voice communication.

(iv) Where tree work is performed by employees qualified in line-clearance tree trimming and trainees qualified in line-clearance tree trimming, the clearances from energized conductors given in Table R-3 shall apply.

QUALIFICATIONS OF DIVE TEAM

1910.410(a)(1) through (4)

(a) General.

(1) Each dive team member shall have the experience or training necessary to perform assigned tasks in a safe and healthful manner.

(2) Each dive team member shall have experience or training in the following:

(i) The use of tools, equipment, and systems relevant to assigned tasks;

(ii) Techniques of the assigned diving mode; and

(iii) Diving operations and emergency procedures.

(3) All dive team members shall be trained in cardiopulmonary resuscitation and first aid (American Red Cross standard course or equivalent).

(4) Dive team members who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving-related physics and physiology.

1910.410(b)(1)

(b) Assignments.

(1) Each dive team member shall be assigned tasks in accordance with the employee's experience or training, except that limited additional tasks may be assigned to an employee undergoing training provided that these tasks are performed under the direct supervision of an experienced dive team member.

1910.410(c)(2)

(c) Designated person-in-charge.

(2) The designated person-in-charge shall have experience and training in the conduct of the assigned diving operation.

4-NITROBIPHENYL

1910.1003(e)(5)(i) and (ii)

(e) Signs, information and training. (5) Training and indoctrination.

(i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:

(a) The nature of the carcinogenic hazards of 4-Nitrobiphenyl, including local and systemic toxicity;

(b) The specific nature of the operation involving 4-Nitrobiphenyl which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of 4-Nitrobiphenyl;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

ALPHA-NAPH-THYLAMINE

1910.1004(e)(5) (i) and (ii)

(e) Signs, information and training. (5) Training and indoctrination.

(i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:

(a) The nature of the carcinogenic hazards of alpha-Naphthylamine, including local and systemic toxicity;

(b) The specific nature of the operation involving alpha-Naphthylamine which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of alpha-Naphthylamine;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

METHYL CHLOROMETHYL ETHER

1910.1006(e)(5) (i) and (ii)

(e) Signs, information and training. (5) Training and indoctrination.

(i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:

(a) The nature of the carcinogenic hazards of Methyl chloromethyl ether, including local and systemic toxicity;

(b) The specific nature of the operation involving Methyl chloromethyl ether which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of Methyl chloromethyl ether;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

3,3'-DICHLORO-BENZIDINE (and its salts)

1910.1007(e)(5)(i) and (ii)

(e) Signs, information and training. (5) Training and indoctrination.

(i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:

(a) The nature of the carcinogenic hazards of 3,3'-Dichlorobenzidine (or its salts), including local and systemic toxicity;

(b) The specific nature of the operation involving 3,3'-Dichlorobenzidine (or its salts) which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of 3,3'-Dichlorobenzidine (or its salts);

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

BIS-CHLOROMETHYL ETHER

1910.1008(e)(5)(i) and (ii)

(e) Signs, information and training. (5) Training and indoctrination.

(i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:

(a) The nature of the carcinogenic hazards of bis-Chloromethyl ether, including local and systemic toxicity;

(b) The specific nature of the operation involving bis-Chloromethyl ether which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of bis-Chloromethyl ether;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

BETA-NAPH-THYLAMINE

1910.1009(e)(5)(i) and (ii)

(e) Signs, information and training. (5) Training and indoctrination.

(i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:

(a) The nature of the carcinogenic hazards of beta-Naphthylamine, including local and systemic toxicity;

(b) The specific nature of the operation involving beta-Naphthylamine which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of beta-Naphthylamine;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

BENZIDINE

1910.1010(e)(5)(i) and (ii)

(e) Signs, information and training. (5) Training and indoctrination.

(i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:

(a) The nature of the carcinogenic hazards of Benzidine, including local and systemic toxicity;

(b) The specific nature of the operation involving Benzidine which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of Benzidine;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

4-AMINODIPHENYL

1910.1011(e)(5)(i) and (ii)

(e) Signs, information and training. (5) Training and indoctrination.

(i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:

(a) The nature of the carcinogenic hazards of 4-Aminodiphenyl, including local and systemic toxicity;

(b) The specific nature of the operation involving 4-Aminodiphenyl which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of 4-Aminodiphenyl;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

ETHYLENEIMINE

1910.1012(e)(5)(i) and (ii)

(e) Signs, information and training. (5) Training and indoctrination.

(i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:

(a) The nature of the carcinogenic hazards of Ethyleneimine, including local and systemic toxicity;

(b) The specific nature of the operation involving Ethyleneimine which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of Ethyleneimine;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

BETA-PROPIOLACTONE

1910.1013(e)(5)(i) and (ii)

(e) Signs, information and training. (5) Training and indoctrination.

(i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:

(a) The nature of the carcinogenic hazards of beta-Propiolactone, including local and systemic toxicity;

(b) The specific nature of the operation involving beta-Propiolactone which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of beta-Propiolactone;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

2-ACETYLAMINO-FLUORENE

1910.1014(e)(5)(i) and (ii)

(e) Signs, information and training. (5) Training and indoctrination.

(i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:

(a) The nature of the carcinogenic hazards of 2-Acetylaminofluorene including local and systemic toxicity;

(b) The specific nature of the operation involving 2-Acetylaminofluorene which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of 2-Acetylaminofluorene;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

4-DIMETHYLAMINO-AZOBENZENE 1910.1015(e)(5)(i) and (ii)

(e) Signs, information and training. (5) Training and indoctrination.

(i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:

(a) The nature of the carcinogenic hazards of 4-Dimethylaminoazobenzene, including local and systemic toxicity;

(b) The specific nature of the operation involving 4-Dimethylaminoazobenzene which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of 4-Dimethylaminoazobenzene;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

N-NITROSO-DIMETHYLAMINE 1910.1016(e)(5)(i) and (ii)

(e) Signs, information and training. (5) Training and indoctrination.

(i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:

(a) The nature of the carcinogenic hazards of N-Nitrosodimethylamine, including local and systemic toxicity;

(b) The specific nature of the operation involving N-Nitrosodimethylamine which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of N-Nitrosodimethylamine;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

VINYL CHLORIDE
1910.1017(j)(1)(i) through (ix)

(j) Training. Each employee engaged in vinyl chloride or polyvinyl chloride operations shall be provided training in a program relating to the hazards of vinyl chloride and precautions for its safe use.

(1) The program shall include:

(i) The nature of the health hazard from chronic exposure to vinyl chloride including specifically the carcinogenic hazard;

(ii) The specific nature of operations which could result in exposure to vinyl chloride in excess of the permissible limit and necessary protective steps;

(iii) The purpose for, proper use, and limitations of respiratory protective devices;

(iv) The fire hazard and acute toxicity of vinyl chloride, and the necessary protective steps;

(v) The purpose for and a description of the monitoring program;

(vi) The purpose for, and a description of, the medical surveillance program;

(vii) Emergency procedures;

(viii) Specific information to aid the employee in recognition of conditions which may result in the release of vinyl chloride; and

(ix) A review of this standard at the employee's first training and indoctrination program, and annually thereafter.

INORGANIC ARSENIC
1910.1018(o)(1) and (2)

(o) Employee information and training.

(1) Training program.

(i) The employer shall institute a training program for all employees who are subject to exposure to inorganic arsenic above the action level without regard to respirator use, or for whom there is a possibility of skin or eye irritation from inorganic arsenic. The employer shall assure that those employees participate in the training program.

(ii) The training program shall be provided by October 1, 1978, for employees covered by this provision, at the time of initial assignment for those subsequently covered by this provision, and shall be repeated at least quarterly for employees who have optional use of respirators and at least annually for other covered employees thereafter; and the employer shall assure that each employee is informed of the following:

(A) The information contained in Appendix A;

(B) The quantity, location, manner of use, storage, sources of exposure, and the specific nature of operations which could result in exposure to inorganic arsenic as well as any necessary protective steps;

(C) The purpose, proper use, and limitation of respirators;

(D) The purpose and a description of the medical surveillance program as required by paragraph (n) of this section;

(E) The engineering controls and work practices associated with the employee's job assignment; and

(F) A review of this standard.

(2) Access to training materials.

(i) The employer shall make readily available to all affected employees a copy of this standard and its appendixes.

(ii) The employer shall provide, upon request, all materials relating to the employee information and training program to the Assistant Secretary and the Director.

1910.1025(l)(1) and (2)

(l) Employee information and training.

(1) Training program.

(i) Each employer who has a workplace in which there is a potential exposure to airborne lead at any level shall inform employees of the content of Appendixes A and B of this regulation.

(ii) The employer shall institute a training program for and assure the participation of all employees who are subject to exposure to lead at or above the action level or for whom the possibility of skin or eye irritation exists.

(iii) The employer shall provide initial training by 180 days from the effective date [Editor's Note: OSHA's lead standard became effective February 1, 1979.] for those employees covered by paragraph (l)(1)(ii) on the standard's effective date and prior to the time of initial job assignment for those employees subsequently covered by this paragraph.

(iv) The training program shall be repeated at least annually for each employee.

(v) The employer shall assure that each employee is informed of the following:

(A) The content of this standard and its appendixes;

(B) The specific nature of the operations which could result in exposure to lead above the action level;

(C) The purpose, proper selection, fitting, use, and limitations of respirators;

(D) The purpose and a description of the medical surveillance program, and the medical removal protection program including information concerning the adverse health effects associated with excessive exposure to lead (with particular attention to the adverse reproductive effects on both males and females);

(E) The engineering controls and work practices associated with the employee's job assignment;

(F) The contents of any compliance plan in effect; and

(G) Instructions to employees that chelating agents should not routinely be used to remove lead from their bodies and should not be used at all except under the direction of a licensed physician;

(2) Access to information and training materials.

(i) The employer shall make readily available to all affected employees a copy of this standard and its appendixes.

(ii) The employer shall provide, upon request, all materials relating to the employee information and training program to the Assistant Secretary and the Director.

(iii) In addition to the information required by paragraph (l)(1)(v), the employer shall include as part of the training program, and shall distribute to employees, any materials pertaining to the Occupational Safety and Health Act, the regulations issued pursuant to that Act, and this lead standard, which are made available to the employer by the Assistant Secretary.

BENZENE

1910.1028(j)(1) and (2)

(j) Employee information and training.

(1) Training program.

(i) The employer shall institute a training program for all employees assigned to workplaces where benzene is produced, reacted, released, packaged, repackaged, stored, transported, handled or used and shall assure that each employee assigned to these workplaces is informed of the following:

(a) The information contained in Appendixes A and B of this section;

(b) The quantity, location, manner of use, release, or storage of benzene and the specific nature of operations which could result in exposure above the permissible exposure limits as well as necessary protective steps;

(c) The purpose, proper use, and limitations of personal protective equipment and clothing required by paragraph (h) of this section and of respiratory devices required by paragraph (g) of this section and § 1910.134(b), (d), (e), and (f);

(d) The purpose and a description of the medical surveillance program required by paragraph (i) of this section and the information contained in Appendix C of this section; and

(e) The contents of this standard.

(ii) The training program required under paragraph (j)(1)(i) of this section shall be provided within 90 days of the effective date of this section or at the time of initial assignment to workplaces where benzene is produced, reacted, released, packaged, repackaged, stored, transported, handled or used, and at least annually thereafter.

(2) Access to training materials.

(i) The employer shall make a copy of this standard and its appendixes readily available to all affected employees.

(ii) The employer shall provide, upon request, all materials relating to the employee information and training program to the Assistant Secretary and the Director.

COKE OVEN EMISSIONS

1910.1029(k)(1) and (2)

(k) Employee information and training.

(1) Training program.

(i) The employer shall institute a training program for employees who are employed in the regulated area and shall assure their participation.

(ii) The training program shall be provided as of January 27, 1977 for employees who are employed in the regulated area at that time or at the time of initial assignment to a regulated area.

(iii) The training program shall be provided at least annually for all employees who are employed in the regulated area, except that training regarding the occupational safety and health hazards associated with exposure to coke oven emissions and the purpose, proper use, and limitations of respiratory protective devices shall be provided at least quarterly until January 20, 1978.

(iv) The training program shall include informing each employee of:

(a) The information contained in the substance information sheet for coke oven emissions (Appendix A);

(b) The purpose, proper use, and limitations of respiratory protective devices required in accordance with paragraph (g) of this section;

(c) The purpose for and a description of the medical surveillance program required by paragraph (j) of this section including information on the occupational safety and health hazards associated with exposure to coke oven emissions;

(d) A review of all written procedures and schedules required under paragraph (f) of this section; and

(e) A review of this standard.

(2) Access to training materials.

(i) The employer shall make a copy of this standard and its appendixes readily available to all employees who are employed in the regulated area.

(ii) The employer shall provide upon request all materials relating to the employee information and training program to the Secretary and the Director.

COTTON DUST
1910.1043(l)(1) and (2)

(i) Employee education and training.

(1) Training program.

(i) The employer shall provide a training program for all employees in all workplaces where cotton dust is present, and shall assure that each employee in these workplaces is informed of the following:

(a) The specific nature of the operations which could result in exposure to cotton dust at or above the permissible exposure limit;

(b) The measures, including work practices required by paragraph (g) of this section, necessary to protect the employee from exposures in excess of the permissible exposure limit;

(c) The purpose, proper use and limitations of respirators required by paragraph (f) of this section;

(d) The purpose for and a description of the medical surveillance program required by paragraph (h) of this section and other information which will aid exposed employees in understanding the hazards of cotton dust exposures; and

(e) The contents of this standard and its appendixes.

(ii) The training program shall be provided prior to initial assignment and shall be repeated at least annually.

(2) Access to training materials.

(i) Each employer shall post a copy of this section with its appendixes in a public location at the workplace, and shall, upon request, make copies available to employees.

(ii) The employer shall provide all materials relating to the employee training and information program to the Assistant Secretary and the Director upon request.

(iii) In addition to the information required by paragraph (i)(1), the employer shall include as part of the training program, and shall distribute to employees, any materials, pertaining to the Occupational Safety and Health Act, the regulations issued pursuant to that Act, and this cotton dust standard, which are made available to the employer by the Assistant Secretary.

1,2-DIBROMO-3-CHLOROPROPANE
1910.1044(n)(1) and (2)

(n) Employee information and training.

(1) Training program.

(i) The employer shall institute a training program for all employees who may be exposed to DBCP and shall assure their participation in such training program.

(ii) The employer shall assure that each employee is informed of the following:

(a) The information contained in Appendix A.

(b) The quantity, location, manner of use, release or storage of DBCP and the specific nature of operations which could result in exposure to DBCP as well as any necessary protective steps;

(c) The purpose, proper use, and limitations of respirators;

(d) The purpose and description of the medical surveillance program required by paragraph (m) of this section; and

(e) A review of this standard, including appendixes.

(2) Access to training materials.

(i) The employer shall make a copy of this standard and its appendixes readily available to all affected employees.

(ii) The employer shall provide, upon request, all materials relating to the employee information and training program to the Assistant Secretary and the Director.

ACRYLONITRILE (VINYL CYANIDE)
1910.1045(o)(1) and (2)

(o) Employee information and training.

(1) Training program.

(i) By January 2, 1979, the employer shall institute a training program for and assure the participation of all employees exposed to AN above the action level, all employees whose exposures are maintained below the action level by engineering and work practice controls, and all employees subject to potential skin or eye contact with liquid AN.

(ii) Training shall be provided at the time of initial assignment, or upon institution of the training program, and at least annually thereafter, and the employer shall assure that each employee is informed of the following:

(A) The information contained in Appendixes A and B [Editor's Note: See Federal Register, Vol. 43, No. 192, Oct. 3, 1978, pp. 45813–45815.];

(B) The quantity, location, manner of use, release, or storage of AN, and the specific nature of operations which could result in exposure to AN, as well as any necessary protective steps;

(C) The purpose, proper use, and limitations of respirators and protective clothing;

(D) The purpose and a description of the medical surveillance program required by paragraph (n) of this section;

(E) The emergency procedures developed, as required by paragraph (i) of this section;

(F) Engineering and work practice controls, their function, and the employee's relationship to these controls; and

(G) A review of this standard.

(2) Access to training materials.

(i) The employer shall make a copy of this standard and its appendixes readily available to all affected employees.

(ii) The employer shall provide, upon request, all materials relating to the employee information and training program to the Assistant Secretary and the Director.

EXPOSURE TO COTTON DUST IN COTTON GINS
1910.1046(f)(1) and (2)

(f) Employee education and training.

(1) Training program.

(i) Each employer who operates an active gin shall institute a training program for all his employees, prior to initial assignment, and shall assure that each employee is informed of the following:

(a) The specific nature of the operations which could result in exposure to cotton dust;

(b) The measures, including work practices, required by paragraph (c) of this section, necessary to protect the employee from excess exposures;

(c) The purpose, proper use and limitations of respirators required by paragraph (d) of this section;

(d) The purpose for and a description of the medical surveillance program required by paragraph (e) of this section; and other information which will aid exposed employees in understanding the hazards of cotton dust exposure; and

(e) The contents of this standard and its appendixes.

(2) Access to training materials.

(i) Each employer shall post a copy of this section with its appendixes in a public location at the workplace, and shall, upon request, make copies available to employees.

(ii) The employer shall provide all materials relating to the employee training and information program to the Assistant Secretary and the Director upon request.

(iii) An employer whose workforce consists of a significant percentage of Spanish speaking employees who cannot communicate effectively in English shall provide bilingual administration of the provisions of this section.

(iv) In addition to the information required by paragraph (f)(1), the employer shall include as part of his training program and distribute to employees any materials pertaining to the Occupational Safety and Health Act, the regulations issued pursuant to that Act, and to this cotton dust standard which are made available by the Assistant Secretary.

Maritime Training Requirements

The following training requirements have been excerpted from Parts 1915 (Ship Repairing), 1916 (Shipbuilding), 1917 (Shipbreaking), and 1918 (Longshoring) of Title 29, Code of Federal Regulations. Note that in addition to these requirements, Part 1910, relating to general industry (beginning on page 1), also contains applicable training standards.

Part 1915—Ship Repairing

Subject and Standard Number	Training Requirement
COMPETENT PERSON	[The term "competent person" for purposes of this part means a person who is capable of recognizing and evaluating employee exposure to hazardous substances or to other unsafe conditions and is capable of specifying the necessary protection and precautions to be taken to ensure the safety of employees as required by the particular regulation under the condition to which it applies. For the purposes of Subparts B, C, and D of this part, except for §§1915.11(a)(1)(iv) and 1915.24(b)(8), to which the above definition applies, the competent person must also meet the additional requirements of §1915.10.]
1915.10(a) and (b)	(a) Designation. (1) For the purposes of Subparts B, C, D, and H of this part, except for §§1915.24(b)(8) and 1915.25(a)(5), one or more competent persons shall be designated by the employer in accordance with the applicable requirements of this section unless the requirements of Subparts B, C, D, and H of this part are always carried out by a National Fire Protection Association Certified Marine Chemist. (2) The employer shall indicate on U.S. Department of Labor Form MAR–8 [now OSHA–73] "Designation of Competent Person" either those employees designated as competent persons or that the prescribed functions of such persons are always carried out by a National Fire Protection Association Certified Marine Chemist in addition to his professional duties. When additions or changes are made in the personnel so designated, a new Form MAR–8 [now OSHA–73] shall be executed. A copy of this executed form shall be forwarded to the nearest office of the Occupational Safety and Health Administration. (b) Criteria. The following criteria shall guide the employer in designating employees as competent persons: (1) Ability to understand the meaning of designations on certificates and of any qualifications relating thereto and to carry out any instructions, either written or oral, left by the National Fire Protection Association Certified Marine Chemist or person authorized by the U.S. Coast Guard referred to in §1915.13.

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(2) Ability to use and interpret the readings of an oxygen indicator and a combustible gas indicator. The ability to use and interpret the readings of a carbon monoxide indicator and a carbon dioxide indicator, if the operations involve such hazardous gases.

(3) Familiarity with and understanding of Subparts B, C, D, and H of this part.

(4) Familiarity with the structure and knowledge of the location and designation of spaces of the types of vessels on which repair work is done.

(5) Capability to perform the tests and inspections required by Subparts B, C, D, and H of this part and to write the required logs.

PRECAUTIONS BEFORE ENTERING

1915.11(a)(1)

(a) Flammable atmospheres and residues.

(1) Before employees are initially permitted to enter any of the ship's spaces designated in subdivisions (i) and (ii) of this subparagraph, the atmosphere within the space to be entered shall be tested by a competent person to determine the concentration of flammable vapors or gases within the space.

(i) Cargo spaces or other spaces containing or having last contained combustible or flammable liquids or gases in bulk.

(ii) Spaces immediately adjacent to those described in subdivision (i) of this subparagraph.

1915.11(b)(1)

(b) Toxic atmospheres and residues.

(1) Before employees are initially permitted to enter any of the ship's spaces designated in subdivisions (i), (ii), and (iii) of this subparagraph, the atmosphere in the space to be entered shall be tested for toxic atmospheric contaminants, and the space inspected for the presence of toxic or corrosive residues by a Marine Chemist, Industrial Hygienist or other person qualified to make these tests and inspections.

(i) Cargo spaces or other spaces containing or having last contained bulk liquids, gases, or solids of a toxic, corrosive, or irritant nature.

(ii) Spaces which have been fumigated.

(iii) Spaces immediately adjacent to those described in subdivisions (i) and (ii) of this subparagraph.

1915.11(c)(1)

(c) Oxygen deficient atmospheres.

(1) Before employees are initially permitted to enter any of the ship's spaces designated in subdivisions (i) through (v) of this subparagraph, the atmosphere in the spaces to be entered shall be tested by a competent person with an oxygen indicator or other suitable device to ensure that it contains at least 16.5 percent oxygen.

(i) Spaces in which the tests required by paragraphs (a) and (b) of this section indicate that no flammable or toxic contaminants are present in the atmosphere.

(ii) Compartments which have been sealed.

(iii) Spaces which have been coated and closed up.

(iv) Nonventilated compartments which have been freshly painted.

(v) Cargo spaces containing cargoes or residues of cargoes which absorb oxygen, such as scrap iron, fresh fruit and molasses, and various vegetable drying oils in bulk.

CLEANING AND OTHER COLD WORK

1915.12(a)(3) and (5)

(a) Employees shall be permitted to perform manual cleaning to remove residue materials, scale, and debris or to perform other cold work in spaces described in §1915.11 (a)(1)(i) and (ii) and (b)(1)(i) through (iii) before they have been certified as gas free only under the following conditions:

(3) Tests shall be made by a competent person prior to commencement of cold work and with sufficient frequency thereafter, in accordance with temperature, volatility of the residues and other existing conditions in and about the spaces, to ensure that the concentration stated in subparagraph (2) of this paragraph is not exceeded.

(5) Tests shall be made by a competent person to ensure that the exhaust vapors from these spaces are not accumulating in other areas within or around the vessel, marine railway, dry-dock, graving dock, or under the pier where sources of ignition may be present. Should such accumulations be found, any sources of ignition within the affected area shall be removed or extinguished.

CERTIFICATION BEFORE HOT WORK IS BEGUN
1915.13(b) and (c)

(b) In dry cargo holds for which a Marine Chemist's certificate is not required by paragraph (a)(2)(ii) of this section, hot work may be performed only after a competent person has carefully examined the hold and found it to be free of flammable liquids, gases, and vapors. If flammable liquids, gases, or vapors are found, hot work shall not be performed within the space until the flammable liquids, gases, or vapors have been removed and a test indicates that the space is safe for fire.

(c) Before hot work is performed in engine room and boiler room spaces of any vessel for which a Marine Chemist's certificate is not required by the provision of paragraph (a) of this section or in fuel tank and engine compartments of boats, the bilges shall be inspected and tested by a competent person to ensure that they are free of flammable liquids, gases, and vapors. If flammable liquids, gases, or vapors are found, hot work shall not be performed within the space until the flammable liquids, gases, or vapors have been removed and a test indicates that the space is safe for fire.

MAINTAINING GAS FREE CONDITIONS
1915.14(c) and (d)

(c) The employer shall inform masters and chief engineers of vessels of the provisions of this section and shall confirm that they are aware of their responsibilities for seeing that their crews understand and obey all warning signs, tags, and the limitations stated on the Marine Chemist's certificates.

(d) When conditions in a tank are such that there is a possibility of hazardous vapor being released from residues or other sources after a Marine Chemist's certificate has been issued, a competent person shall make tests to insure that the gas-free condition is maintained irrespective of whether hot work is being performed in the tank. When the competent person finds that atmospheric conditions have altered, work shall be stopped and a new Marine Chemist's certificate in accordance with the requirements of §1915.13(a) shall be obtained before work is resumed.

PAINTING
1915.24(b)(1) and (8)

(b) Paints and tank coatings dissolved in highly volatile, toxic and flammable solvents. Several organic coatings, adhesives and resins are dissolved in highly toxic, flammable and explosive solvents with flash points below 80° F. Work involving such materials shall be done only when all of the following special precautions have been taken:

(1) Sufficient exhaust ventilation shall be provided to keep the concentration of solvent vapors below ten (10) percent of the lower explosive limit. Frequent tests shall be made by a competent person to ascertain the concentration.

(8) A competent person shall inspect all power and lighting cables to ensure that the insulation is in excellent condition, free of all cracks and worn spots, that there are no connections within fifty (50) feet of the operation, that lines are not overloaded, and that they are suspended with sufficient slack to prevent undue stress or chafing.

FLAMMABLE LIQUIDS

1915.25(a)(2) and (5)

(a) In all cases when liquid solvents, paint and preservative removers, paints or vehicles, other than those covered by §1915.24(b), are capable of producing a flammable atmosphere under the conditions of use, the following precautions shall be taken:

(2) Ventilation shall be provided in sufficient quantities to keep the concentration of vapors below ten (10) percent of their lower explosive limit. Frequent tests shall be made by a competent person to ascertain the concentration.

(5) A competent person shall inspect all power and lighting cables to ensure that the insulation is in excellent condition, free of all cracks and worn spots, that there are no connections within fifty (50) feet of the operation, that lines are not overloaded, and that they are suspended with sufficient slack to prevent undue stress or chafing.

FIRE PREVENTION

1915.32(e)

(e) When the welding, cutting, or heating operation is such that normal fire prevention precautions are not sufficient, additional personnel shall be assigned to guard against fire while the actual welding, cutting, or heating operation is being performed and for a sufficient period of time after completion of the work to insure that no possibility of fire exists. Such personnel shall be instructed as to the specific anticipated fire hazards and how the firefighting equipment provided is to be used.

WELDING, CUTTING AND HEATING IN WAY OF PRESERVATIVE COATINGS

1915.33(a)

(a) Before welding, cutting or heating is commenced on any surface covered by a preservative coating whose flammability is not known, a test shall be made by a competent person to determine its flammability. Preservative coatings shall be considered to be highly flammable when scrapings burn with extreme rapidity.

1915.33(d)(1)

(d) Before welding, cutting or heating is commenced in enclosed spaces on metals covered by soft and greasy preservatives, the following precautions shall be taken:

(1) A competent person shall test the atmosphere in the space to ensure that it does not contain explosive vapors, since there is a possibility that some soft and greasy preservatives may have flash points below temperatures which may be expected to occur naturally. If such vapors are determined to be present, no hot work shall be commenced until such precautions have been taken as will ensure that the welding, cutting or heating can be performed in safety.

1915.33(e)

(e) Immediately after welding, cutting or heating is commenced in enclosed spaces on metal covered by soft and greasy preservatives, and at frequent intervals thereafter, a competent person shall make tests to ensure that no flammable vapors are being produced by the coatings. If such vapors are determined to be present, the operation shall be stopped immediately and shall not be resumed until such additional precautions have been taken as are necessary to ensure that the operation can be resumed safely.

WELDING, CUTTING AND HEATING OF HOLLOW METAL CONTAINERS AND STRUCTURES NOT COVERED BY § 1915.11

1915.34(c)

(c) Before welding, cutting, heating or brazing is begun on structural voids such as skegs, bilge keels, fair waters, masts, booms, support stanchions, pipe stanchions or railings, a competent person shall inspect the object and, if necessary, test it for the presence of flammable liquids or vapors. If flammable liquids or vapors are present, the object shall be made safe.

GAS WELDING AND CUTTING
1915.35(d)(1) through (6)

(d) Use of fuel gas. The employer shall thoroughly instruct employees in the safe use of fuel gas as follows:

(1) Before connecting a regulator to a cylinder valve, the valve shall be opened slightly and closed immediately. (This action is generally termed "cracking" and is intended to clear the valve of dust or dirt that might otherwise enter the regulator.) The person cracking the valve shall stand to one side of the outlet, not in front of it. The valve of a fuel gas cylinder shall not be cracked where the gas would reach welding work sparks, flame or other possible sources of ignition.

(2) The cylinder valve shall always be opened slowly to prevent damage to the regulator. To permit quick closing, valves on fuel gas cylinders shall not be opened more than 1½ turns. When a special wrench is required, it shall be left in position on the stem of the valve while the cylinder is in use so that the fuel gas flow can be shut off quickly in case of an emergency. In the case of manifolded or coupled cylinders, at least one such wrench shall always be available for immediate use. Nothing shall be placed on top of a fuel gas cylinder, when in use, which may damage the safety device or interfere with the quick closing of the valve.

(3) Fuel gas shall not be used from cylinders through torches or other devices which are equipped with shut-off valves without reducing the pressure through a suitable regulator attached to the cylinder valve or manifold.

(4) Before a regulator is removed from a cylinder valve, the cylinder valve shall always be closed and the gas released from the regulator.

(5) If, when the valve on a fuel gas cylinder is opened, there is found to be a leak around the valve stem, the valve shall be closed and the gland nut tightened. If this action does not stop the leak, the use of the cylinder shall be discontinued, and it shall be properly tagged and removed from the vessel. In the event that fuel gas should leak from the cylinder valve rather than from the valve stem and the gas cannot be shut off, the cylinder shall be properly tagged and removed from the vessel. If a regulator attached to a cylinder valve will effectively stop a leak through the valve seat, the cylinder need not be removed from the vessel.

(6) If a leak should develop at a fuse plug or other safety device, the cylinder shall be removed from the vessel.

ARC WELDING AND CUTTING
1915.36(d)(1) through (4)

(d) Operating instructions. Employers shall instruct employees in the safe means of arc welding and cutting as follows:

(1) When electrode holders are to be left unattended, the electrodes shall be removed and the holders shall be so placed or protected that they cannot make electrical contact with employees or conducting objects.

(2) Hot electrode holders shall not be dipped in water, since to do so may expose the arc welder or cutter to electric shock.

(3) When the arc welder or cutter has occasion to leave his work or to stop work for any appreciable length of time, or when the arc welding or cutting machine is to be moved, the power supply switch to the equipment shall be opened.

(4) Any faulty or defective equipment shall be reported to the supervisor.

USES OF FISSIONABLE MATERIAL IN SHIP REPAIR
1915.37(b)

(b) Any activity which involves the use of radioactive material, whether or not under license from the Atomic Energy Commission, shall be performed by competent persons specially trained in the proper and safe operation of such equipment. In the case of materials used under Commission license, only persons actually licensed, or competent persons under direction and supervision of the licensee, shall perform such work.

WORK ON OR IN THE VICINITY OF RADAR AND RADIO
1915.55(a)

(a) No employees other than radar or radio repairmen shall be permitted to work on masts, king posts or other aloft areas unless the radar and radio are secured or otherwise made incapable of radiation. In either event, the radio and radar shall be appropriately tagged.

HEALTH AND SANITATION
1915.57(d)

(d) The employer shall instruct employees who will be exposed to the hazardous materials as to the nature of the hazards and the means of avoiding them.

FIRST AID
1915.58(a)

(a) Unless a first aid room and a qualified attendant are close at hand and prepared to render first aid to employees on behalf of the employer, the employer shall furnish a first aid kit for each vessel on which work is being performed except that when work is being performed on more than one small vessel at one pier, only one kit shall be required. The kit, when required, shall be kept close to the vessel and at least one employee, close at hand, shall be qualified to administer first aid to the injured.

ROPES, CHAINS AND SLINGS
1915.62(c)(5)

(c) Chains and chain slings.

(5) All repairs to chains shall be made under qualified supervision. Links or portions of the chain found to be defective as described in subparagraph (4) of this paragraph shall be replaced by links having proper dimensions and made of material similar to that of the chain. Before repaired chains are returned to service, they shall be proof tested to the proof test load recommended by the manufacturer.

USE OF GEAR
1915.66(k)

(k) An individual who is familiar with the signal code in use shall be assigned to act as a signalman when the hoist operator cannot see the load being handled. Communications shall be made by means of clear and distinct visual or auditory signals except that verbal signals shall not be permitted.

QUALIFICATIONS OF OPERATORS
1915.67(a) and (b)

(a) When ship's gear is used to hoist materials aboard, a competent person shall determine that the gear is properly rigged, that it is in safe condition, and that it will not be overloaded by the size and weight of the lift.

(b) Only those employees who understand the signs, notices, and operating instructions, and are familiar with the signal code in use, shall be permitted to operate a crane, winch, or other power operated hoisting apparatus.

POWDER ACTUATED FASTENING TOOLS
1915.75(b)(1) through (6)

(b) Instruction of operators. Before employees are permitted to use powder actuated tools, they shall have been thoroughly instructed by a competent person with respect to the requirements of paragraph (a) of this section and the safe use of such tools as follows:

(1) Before using a tool, the operator shall inspect it to determine that it is clean, that all moving parts operate freely and that the barrel is free from obstructions.

(2) When a tool develops a defect during use, the operator shall immediately cease to use it and shall notify his supervisor.

(3) Tools shall not be loaded until just prior to the intended firing time and the tool shall not be left unattended while loaded.

(4) The tool, whether loaded or empty, shall not be pointed at any person, and hands shall be kept clear of the open barrel end.

(5) In case of a misfire, the operator shall hold the tool in the operating position for at least 15 seconds and shall continue to hold the muzzle against the work surface during disassembly or opening of the tool and removal of the powder load.

(6) Neither tools nor powder charges shall be left unattended in places where they would be available to unauthorized persons.

INTERNAL COMBUSTION ENGINES, OTHER THAN SHIP'S EQUIPMENT

1915.76(c)

(c) When internal combustion engines on vehicles, such as forklifts and mobile cranes, or on portable equipment such as fans, generators, and pumps exhaust into the atmosphere below decks, the competent person shall make tests of the carbon monoxide content of the atmosphere as frequently as conditions require to ensure that dangerous concentrations do not develop. Employees shall be removed from the compartment involved when the carbon monoxide concentration exceeds 50 parts per million (0.005%). The employer shall use blowers sufficient in size and number and so arranged as to maintain the concentration below this allowable limit before work is resumed.

RESPIRATORY PROTECTION

1915.82(a)(4)

(a) General.

(4) Employees required to use respiratory protective equipment approved for use in atmospheres immediately dangerous to life shall be thoroughly trained in its use. Employees required to use other types of respiratory protective equipment shall be instructed in the use and limitations of such equipment.

1915.82(b)(4)

(b) Protection in atmospheres immediately dangerous to life.

(4) In the vicinity of each vessel in which there is a danger of employees being exposed to an atmosphere immediately dangerous to life, the employer shall have on hand and ready for use respiratory protective equipment approved for such use. When such equipment is required, one or more persons shall be thoroughly trained in the use of the equipment.

PORTABLE AIR RECEIVERS AND OTHER UNFIRED PRESSURE VESSELS

1915.101(b)

(b) Portable, unfired pressure vessels, not built to the code requirements of paragraph (a) of this section, and built prior to the effective date of this regulation, shall be examined quarterly by a competent person. They shall be subjected yearly to a hydrostatic pressure test of one and one-half times the working pressure of the vessels.

Part 1916—Shipbuilding

COMPETENT PERSON

[The term "competent person" for purposes of this part means a person who is capable of recognizing and evaluating employee exposure to hazardous substances or to other unsafe conditions and is capable of specifying the necessary protection and precautions to be taken to ensure the safety of employees as required by the particular regulation under the condition to which it applies. For the purposes of Subparts C and D of this part, except for § 1916.24 (b) (8), to which the above definition applies, the competent person must also meet the additional requirements of § 1916.10.]

1916.10(a) and (b)

(a) Designation.

(1) For the purposes of Subparts C, D, and H of this part, except for §§ 1916.24(b)(8) and 1916.25(a)(5), one or more competent persons shall be designated by the employer in accordance with the applicable requirements of this section unless the requirements of Subparts C, D, and H of this part are always carried out by a National Fire Protection Association Certified Marine Chemist.

(2) The employer shall indicate on U.S. Department of Labor Form MAR-8 [now OSHA-73] "Designation of Competent Person" either those employees designated as competent persons or that the prescribed functions of such persons are always carried out by a National Fire Protection Association Certified Marine Chemist in addition to his professional duties. When additions or changes are made in the personnel so designated, a new Form MAR-8 [now OSHA-73] shall be executed. A copy of this executed form shall be forwarded to the nearest office of the Occupational Safety and Health Administration.

(b) Criteria. The following criteria shall guide the employer in designating employees as competent persons:

(1) Ability to understand the meaning of designations on certificates and of any qualifications relating thereto and to carry out any instructions, either written or oral, left by the National Fire Protection Association Certified Marine Chemist or issued by a consultant or chemist who may be used by the employer to make the tests and inspections required by Subparts C and D of this part.

(2) Ability to use and interpret the readings of an oxygen indicator and a combustible gas indicator. The ability to use and interpret the readings of a carbon monoxide indicator and a carbon dioxide indicator, if the operations involve such hazardous gases.

(3) Familiarity with and understanding of Subparts C, D, and H of this part.

(4) Familiarity with the structure and knowledge of the location and designation of spaces of the types of vessels on which construction work is done.

(5) Capability to perform the tests and inspections required by Subparts C, D, and H of this part and to write the required logs.

PAINTING
1916.24(b)(8)

(b) Paints and tank coatings dissolved in highly volatile toxic and flammable solvents.

(8) A competent person shall inspect all power and lighting cables to ensure that the insulation is in excellent condition, free of all cracks and worn spots, that there are no connections within fifty(50) feet of the operation, that lines are not overloaded, and that they are suspended with sufficient slack to prevent undue stress or chafing.

FLAMMABLE LIQUIDS
1916.25(a)(2) and (5)

(a) In all cases when liquid solvents, paint and preservative removers, paints or vehicles, other than those covered by § 1916.24(b), are capable of producing a flammable atmosphere under the conditions of use, the following precautions shall be taken:

(2) Ventilation shall be provided in sufficient quantities to keep the concentration of vapors below ten (10) percent of their lower explosive limit. Frequent tests shall be made by a competent person to ascertain the concentration.

(5) A competent person shall inspect all power and lighting cables to ensure that the insulation is in excellent condition, free of all cracks and worn spots, that there are no connections within fifty (50) feet of the operation, that lines are not overloaded, and that they are suspended with sufficient slack to prevent undue stress or chafing.

FIRE PREVENTION

1916.32(e)

(e) When the welding, cutting, or heating operation is such that normal fire prevention precautions are not sufficient, additional personnel shall be assigned to guard against fire while the actual welding, cutting, or heating operation is being performed and for a sufficient period of time after completion of the work to insure that no possibility of fire exists. Such personnel shall be instructed as to the specific anticipated fire hazards and how the firefighting equipment provided is to be used.

WELDING, CUTTING AND HEATING IN WAY OF PRESERVATIVE COATINGS

1916.33(a)

(a) Before welding, cutting or heating is commenced on any surface covered by a preservative coating whose flammability is not known, a test shall be made by a competent person to determine its flammability. Preservative coatings shall be considered to be highly flammable when scrapings burn with extreme rapidity.

1916.33(d)(1)

(d) Before welding, cutting or heating is commenced in enclosed spaces on metals covered by soft and greasy preservatives, the following precautions shall be taken:

(1) A competent person shall test the atmosphere in the space to ensure that it does not contain explosive vapors, since there is a possibility that some soft and greasy preservatives may have flash points below temperatures which may be expected to occur naturally. If such vapors are determined to be present, no hot work shall be commenced until such precautions have been taken as will ensure that the welding, cutting, or heating can be performed in safety.

1916.33(e)

(e) Immediately after welding, cutting or heating is commenced in enclosed spaces on metal covered by soft and greasy preservatives, and at frequent intervals thereafter, a competent person shall make tests to ensure that no flammable vapors are being produced by the coatings. If such vapors are determined to be present, the operation shall be stopped immediately and shall not be resumed until such additional precautions have been taken as are necessary to ensure that the operation can be resumed safely.

WELDING, CUTTING AND HEATING OF HOLLOW METAL CONTAINERS AND STRUCTURES

1916.34(c)

(c) Before welding, cutting, heating or brazing is begun on structural voids such as skegs, bilge keels, fair waters, masts, booms, support stanchions, pipe stanchions or railings, a competent person shall inspect the object and, if necessary, test it for the presence of flammable liquids or vapors. If flammable liquids or vapors are present, the object shall be made safe.

GAS WELDING AND CUTTING
1916.35(d)(1) through (6)

(d) Use of fuel gas. The employer shall thoroughly instruct employees in the safe use of fuel gas as follows:

(1) Before connecting a regulator to a cylinder valve, the valve shall be opened slightly and closed immediately. (This action is generally termed "cracking" and is intended to clear the valve of dust or dirt that might otherwise enter the regulator.) The person cracking the valve shall stand to one side of the outlet, not in front of it. The valve of a fuel gas cylinder shall not be cracked where the gas would reach welding work, sparks, flame or other possible sources of ignition.

(2) The cylinder valve shall always be opened slowly to prevent damage to the regulator. To permit quick closing, valves on fuel gas cylinders shall not be opened more than 1½ turns. When a special wrench is required, it shall be left in position on the stem of the valve while the cylinder is in use so that the fuel gas flow can be shut off quickly in case of an emergency. In the case of manifolded or coupled cylinders, at least one such wrench shall always be available for immediate use. Nothing shall be placed on top of a fuel gas cylinder, when in use, which may damage the safety device or interfere with the quick closing of the valve.

(3) Fuel gas shall not be used from cylinders through torches or other devices which are equipped with shut-off valves without reducing the pressure through a suitable regulator attached to the cylinder valve or manifold.

(4) Before a regulator is removed from a cylinder valve, the cylinder valve shall always be closed and the gas released from the regulator.

(5) If, when the valve on a fuel gas cylinder is opened, there is found to be a leak around the valve stem, the valve shall be closed and the gland nut tightened. If this action does not stop the leak, the use of the cylinder shall be discontinued, and it shall be properly tagged and removed from the vessel. In the event that fuel gas should leak from the cylinder valve rather than from the valve stem and the gas cannot be shut off, the cylinder shall be properly tagged and removed from the vessel. If a regulator attached to a cylinder valve will effectively stop a leak through the valve seat, the cylinder need not be removed from the vessel.

(6) If a leak should develop at a fuse plug or other safety device, the cylinder shall be removed from the vessel.

ARC WELDING AND CUTTING
1916.36(d)(1) through (4)

(d) Operating instructions. Employers shall instruct employees in the safe means of arc welding and cutting as follows:

(1) When electrode holders are to be left unattended, the electrodes shall be removed and the holders shall be so placed or protected that they cannot make electrical contact with employees or conducting objects.

(2) Hot electrode holders shall not be dipped in water, since to do so may expose the arc welder or cutter to electric shock.

(3) When the arc welder or cutter has occasion to leave his work or to stop work for any appreciable length of time, or when the arc welding or cutting machine is to be moved, the power supply switch to the equipment shall be opened.

(4) Any faulty or defective equipment shall be reported to the supervisor.

USES OF FISSIONABLE MATERIAL IN SHIPBUILDING
1916.37(b)

(b) Any activity which involves the use of radioactive material, whether or not under license from the Atomic Energy Commission, shall be performed by competent persons specially trained in the proper and safe operation of such equipment. In the case of materials used under Commission license, only persons actually licensed, or competent persons under direction and supervision of the licensee, shall perform such work.

WORK ON OR IN THE VICINITY OF RADAR AND RADIO
1916.55(a)

(a) No employees other than radar or radio repairmen shall be permitted to work on masts, king posts or other aloft areas unless the radar and radio are secured or otherwise made incapable of radiation. In either event, the radio and radar shall be appropriately tagged.

HEALTH AND SANITATION
1916.57(d)

(d) The employer shall instruct employees who will be exposed to the hazardous materials as to the nature of the hazards and the means of avoiding them.

FIRST AID
1916.58(a)

(a) Unless a first aid room and a qualified attendant are close at hand and prepared to render first aid to employees on behalf of the employer, the employer shall furnish a first aid kit for each vessel on which work is being performed, except that when work is being performed on more than one small vessel at one pier, only one kit shall be required. The kit, when required, shall be kept close to the vessel and at least one employee, close at hand, shall be qualified to administer first aid to the injured.

ROPES, CHAINS AND SLINGS
1916.62(c)(5)

(c) Chains and chain slings.

(5) All repairs to chains shall be made under qualified supervision. Links or portions of the chain found to be defective as described in subparagraph (4) of this paragraph shall be replaced by links having proper dimensions and made of material similar to that of the chain. Before repaired chains are returned to service, they shall be proof tested to the proof test load recommended by the manufacturer.

USE OF GEAR
1916.66(k)

(k) An individual who is familiar with the signal code in use shall be assigned to act as a signalman when the hoist operator cannot see the load being handled. Communications shall be made by means of clear and distinct visual or auditory signals except that verbal signals shall not be permitted.

QUALIFICATIONS OF OPERATORS
1916.67(a) and (b)

(a) When ship's gear is used to hoist materials aboard, a competent person shall determine that the gear is properly rigged, that it is in safe condition, and that it will not be overloaded by the size and weight of the lift.

(b) Only those employees who understand the signs, notices, and operating instructions, and are familiar with the signal code in use, shall be permitted to operate a crane, winch, or other power operated hoisting apparatus.

POWDER ACTUATED FASTENING TOOLS

1916.75(b)(1) through (6)

(b) Instruction of operators. Before employees are permitted to use powder actuated fastening tools, they shall have been thoroughly instructed by a competent person with respect to the requirements of paragraph (a) of this section and the safe use of such tools as follows:

(1) Before using a tool, the operator shall inspect it to determine that it is clean, that all moving parts operate freely and that the barrel is free from obstructions.

(2) When a tool develops a defect during use, the operator shall immediately cease to use it and shall notify his supervisor.

(3) Tools shall not be loaded until just prior to the intended firing time and the tool shall not be left unattended while loaded.

(4) The tool, whether loaded or empty, shall not be pointed at any person, and hands shall be kept clear of the open barrel end.

(5) In case of a misfire, the operator shall hold the tool in the operating position for at least 15 seconds and shall continue to hold the muzzle against the work surface during disassembly or opening of the tool and removal of the powder load.

(6) Neither tools nor powder charges shall be left unattended in places where they would be available to unauthorized persons.

INTERNAL COMBUSTION ENGINES, OTHER THAN SHIP'S EQUIPMENT

1916.76(c)

(c) When internal combustion engines on vehicles, such as forklifts and mobile cranes, or on portable equipment such as fans, generators, and pumps exhaust into the atmosphere below decks, the competent person shall make tests of the carbon monoxide content of the atmosphere as frequently as conditions require to insure that dangerous concentrations do not develop. Employees shall be removed from the compartment involved when the carbon monoxide concentration exceeds 50 parts per million (0.005%). The employer shall use blowers sufficient in size and number and so arranged as to maintain the concentration below this allowable limit before work is resumed.

RESPIRATORY PROTECTION

1916.82(a)(4)

(a) General.

(4) Employees required to use respiratory protective equipment approved for use in atmospheres immediately dangerous to life shall be thoroughly trained in its use. Employees required to use other types of respiratory protective equipment shall be instructed in the use and limitations of such equipment.

1916.82(b)(4)

(b) Protection in atmospheres immediately dangerous to life.

(4) In the vicinity of each vessel in which there is a danger of employees being exposed to an atmosphere immediately dangerous to life the employer shall have on hand and ready for use respiratory protective equipment, approved for such use. When such equipment is required, one or more persons shall be thoroughly trained in the use of the equipment.

PORTABLE AIR RECEIVERS AND OTHER UNFIRED PRESSURE VESSELS

1916.101(b)

(b) Portable, unfired pressure vessels, not built to the code requirements of paragraph (a) of this section, and built prior to the effective date of this regulation, shall be examined quarterly by a competent person. They shall be subjected yearly to a hydrostatic pressure test of one and one-half times the working pressure of the vessels.

Part 1917—Shipbreaking

COMPETENT PERSON

[The term "competent person" for purposes of this part means a person who is capable of recognizing and evaluating employee exposure to hazardous substances or to other unsafe conditions and is capable of specifying the necessary protection and precautions to be taken to ensure the safety of employees as required by the particular regulation under the condition to which it applies. For the purposes of Subparts B and D, the competent person shall be one meeting the requirements of §1917.10.]

1917.10(a) and (b)

(a) Designation.

(1) For the purposes of Subparts B, D, and H of this part, one or more competent persons shall be designated by the employer in accordance with the applicable requirements of this section unless the requirements of Subparts B, D, and H of this part are always carried out by a National Fire Protection Association Certified Marine Chemist.

(2) The employer shall indicate on U.S. Department of Labor Form MAR-8 [now OSHA-73] "Designation of Competent Person" either those employees designated as competent persons or that the prescribed functions of such persons are always carried out by a National Fire Protection Association Certified Marine Chemist in addition to his professional duties. When additions or changes are made in the personnel so designated, a new Form MAR-8 [now OSHA-73] shall be executed. A copy of this executed form shall be forwarded to the nearest office of the Occupational Safety and Health Administration.

(b) Criteria. The following criteria shall guide the employer in designating employees as competent persons:

(1) Ability to understand the meaning of designations on certificates and of any qualifications relating thereto and to carry out any instructions, either written or oral, left by the National Fire Protection Association Certified Marine Chemist.

(2) Ability to use and interpret the readings of an oxygen indicator and a combustible gas indicator. The ability to use and interpret the readings of a carbon monoxide indicator and a carbon dioxide indicator, if the operations involve such hazardous gases.

(3) Familiarity with and understanding of Subparts B, D, and H of this part.

(4) Familiarity with the structure and knowledge of the location and designation of spaces of types of vessels on which breaking work is done.

(5) Capability to perform the tests and inspections required by Subparts B, D, and H of this part and to write the required logs.

PRECAUTIONS BEFORE ENTERING

1917.11(a)(1)

(a) Flammable atmospheres and residues.

(1) Before employees are initially permitted to enter any of the ship's spaces designated in subdivisions (i) and (ii) of this subparagraph, the atmosphere within the space to be entered shall be tested by a competent person to determine the concentration of flammable vapors or gases within the space.

(i) Cargo spaces or other spaces containing or having last contained combustible or flammable liquids or gases in bulk.

(ii) Spaces immediately adjacent to those described in subdivision (i) of this subparagraph.

1917.11(b)(1)

(b) Toxic atmospheres and residues.

(1) Before employees are initially permitted to enter any of the ship's spaces designated in subdivisions (i) and (ii) of this subparagraph, the atmosphere in the space to be entered shall be tested for toxic atmospheric contaminants, and the space inspected for the presence of toxic or corrosive residues by a Marine Chemist, Industrial Hygienist or other person qualified to make these tests and inspections.

(i) Cargo spaces or other spaces containing or having last contained bulk liquids, gases, or solids of a toxic, corrosive or irritant nature.

(ii) Spaces immediately adjacent to those described in subdivision (i) of this subparagraph.

1917.11(c)(1)

(c) Oxygen deficient atmospheres.

(1) Before employees are initially permitted to enter any of the ship's spaces designated in subdivisions (i) through (v) of this subparagraph, the atmosphere in the spaces to be entered shall be tested by a competent person with an oxygen indicator or other suitable device to ensure that it contains at least 16.5 percent oxygen.

(i) Spaces in which the tests required by paragraphs (a) and (b) of this section indicate that no flammable or toxic contaminants are present in the atmosphere.

(ii) Compartments which have been sealed.

(iii) Spaces which have been coated and closed up.

(iv) Nonventilated compartments which have been freshly painted.

(v) Cargo spaces containing cargoes or residues of cargoes which absorb oxygen, such as scrap iron, fresh fruit and molasses, and various vegetable drying oils in bulk.

CLEANING AND OTHER COLD WORK

1917.12(a)(3) and (5)

(a) Employees shall be permitted to remove residue materials or to perform other cold work in spaces described in § 1917.11(a)(1)(i) and (ii), and (b)(1)(i) and (ii) only under the following conditions:

(3) Tests shall be made by a competent person prior to commencement of cold work and with sufficient frequency thereafter, in accordance with temperature, volatility of the residues and other existing conditions in and about the spaces to ensure that the concentration stated in subparagraph (2) of this paragraph is not exceeded.

(5) Tests shall be made by a competent person to ensure that the exhaust vapors from these spaces are not accumulating in other areas within or around the vessel, marine railway, dry dock, or under the pier where source of ignition may be present. Should such accumulations be found, any sources of ignition within the affected area shall be removed or extinguished.

CERTIFICATION BEFORE HOT WORK IS BEGUN

1917.13(a)(1)

(a) Hot work in the open. Before hot work is performed from open decks or in tanks or compartments from which the overhead has been completely removed, on the boundaries of cargo spaces or other spaces containing or having last contained combustible or flammable liquids or gases in bulk, the following steps shall be taken:

(1) Tests shall be made by a competent person to determine the concentration of flammable vapors in these spaces. The permissible level of concentration of flammable vapors shall not exceed ten (10) percent of the lower explosive limit in all parts of the spaces.

1917.13(b)(3) and (4)

(b) Hot work below decks.

(3) In dry cargo holds for which a Marine Chemist's certificate is not required by paragraph (b)(2)(ii) of this section, hot work may be performed only after a competent person has carefully examined the hold and found it to be free of flammable liquids, gases, and vapors. If flammable liquids, gases, or vapors are found, hot work shall not be performed within the space until the flammable liquids, gases, or vapors have been removed and a test indicates that the space is safe for fire.

(4) Before hot work is performed in engine room and boiler room spaces of any vessel for which a Marine Chemist's certificate is not required by the provision of paragraph (b)(1) and (2) of this section or in fuel tank and engine compartments of boats, the bilges shall be inspected and tested by a competent person to ensure that they are free of flammable liquids, gases, and vapors. If flammable liquids, gases, or vapors are found, hot work shall not be performed within the space until the flammable liquids, gases, or vapors have been removed and a test indicates that the space is safe for fire.

MAINTAINING GAS FREE CONDITIONS
1917.14(a) and (b)

(a) Hot work in the open.

(1) During the performance of hot work from open decks or in tanks or compartments from which the overhead has been completely removed, on the boundaries of spaces described in § 1917.13(a), other than those filled with water, the competent person shall make frequent tests to ensure that the inert atmosphere is being maintained or that the concentration of flammable vapors remains below ten (10) percent of the lower explosive limit.

(b) Hot work below decks.

(1) When conditions in spaces below decks described in § 1917.13(b) (1) and (2) are such that there is a possibility of hazardous vapors being released from residues or other sources, after a Marine Chemist's certificate has been issued, a competent person shall make tests to ensure that the gas free condition is maintained irrespective of whether hot work is being performed in or on the aforementioned spaces. When the competent person finds that the atmospheric conditions have altered, work shall be stopped and a new Marine Chemist's certificate in accordance with § 1917.13(b) (1) and (2) shall be obtained, before work is resumed.

FIRE PREVENTION
1917.32(b)

(b) In all cases suitable fire extinguishing equipment shall be immediately available in the work area and shall be maintained in a state of readiness for instant use. Personnel assigned to contain fires within controllable limits shall be instructed as to the specific anticipated fire hazards and how the firefighting equipment provided is to be used.

WELDING, CUTTING, AND HEATING IN WAY OF PRESERVATIVE COATINGS
1917.33(a)

(a) Before welding, cutting or heating is commenced on any surface covered by a preservative coating whose flammability is not known, a test shall be made by a competent person to determine its flammability. Preservative coatings shall be considered to be highly flammable when scrapings burn with extreme rapidity.

WELDING, CUTTING AND HEATING OF HOLLOW METAL CONTAINERS AND STRUCTURES NOT COVERED BY § 1917.11
1917.34(c)

(c) Before welding, cutting, heating or brazing is begun on structural voids such as skegs, bilge keels, fair waters, masts, booms, support stanchions, pipe stanchions or railings, a competent person shall inspect the object and, if necessary, test it for the presence of flammable liquids or vapors. If flammable liquids or vapors are present, the object shall be made safe.

GAS WELDING AND CUTTING
1917.35(d)(1) through (6)

(d) Use of fuel gas. The employer shall thoroughly instruct employees in the safe use of fuel gas as follows:

(1) Before connecting a regulator to a cylinder valve, the valve shall be opened slightly and closed immediately. (This action is generally termed "cracking" and is intended to clear the valve of dust or dirt that might otherwise enter the regulator.) The person cracking the valve shall stand to one side of the outlet, not in front of it. The valve of a fuel gas cylinder shall not be cracked where the gas would reach welding work, sparks, flame or other possible sources of ignition.

(2) The cylinder valve shall always be opened slowly to prevent damage to the regulator. To permit quick closing, valves on fuel gas cylinders shall not be opened more than 1½ turns. Where a special wrench is required, it shall be left in position on the stem of the valve while the cylinder is in use so that the fuel gas flow can be shut off quickly in case of an emergency. In the case of manifolded or coupled cylinders, at least one such wrench shall always be available for immediate use. Nothing shall be placed on top of a fuel gas cylinder, when in use, which may damage the safety device or interfere with the quick closing of the valve.

(3) Fuel gas shall not be used from cylinders through torches or other devices which are equipped with shut-off valves without reducing the pressure through a suitable regulator attached to the cylinder valve or manifold.

(4) Before a regulator is removed from a cylinder valve, the cylinder valve shall always be closed and the gas released from the regulator.

(5) If, when the valve on a fuel gas cylinder is opened, there is found to be a leak around the valve stem, the valve shall be closed and the gland nut tightened. If this action does not stop the leak, the use of the cylinder shall be discontinued, and it shall be properly tagged and removed from the vessel. In the event that fuel gas should leak from the cylinder valve rather than from the valve stem and the gas cannot be shut off, the cylinder shall be properly tagged and removed from the vessel. If a regulator attached to a cylinder valve will effectively stop a leak through the valve seat, the cylinder need not be removed from the vessel.

(6) If a leak should develop at a fuse plug or other safety device, the cylinder shall be removed from the vessel.

ARC WELDING AND CUTTING
1917.36(d)(1) through (4)

(d) Operating instructions. Employers shall instruct employees in the safe means of arc welding and cutting as follows:

(1) When electrode holders are to be left unattended, the electrodes shall be removed and the holders shall be so placed or protected that they cannot make electrical contact with employees or conducting objects.

(2) Hot electrode holders shall not be dipped in water, since to do so may expose the arc welder or cutter to electric shock.

(3) When the arc welder or cutter has occasion to leave his work or to stop work for any appreciable length of time, or when the arc welding or cutting machine is to be moved, the power supply switch to the equipment shall be opened.

(4) Any faulty or defective equipment shall be reported to the supervisor.

HEALTH AND SANITATION
1917.57(d)

(d) The employer shall instruct employees who will be exposed to the hazardous materials as to the nature of the hazards and the means of avoiding them.

FIRST AID
1917.58(a)

(a) Unless a first aid room and a qualified attendant are close at hand and prepared to render first aid to employees on behalf of the employer, the employer shall furnish a first aid kit for each vessel on which work is being performed, except that when work is being performed on more than one small vessel at one pier, only one kit shall be required. The kit, when required, shall be kept close to the vessel and at least one employee, close at hand, shall be qualified to administer first aid to the injured.

ROPES, CHAINS AND SLINGS
1917.62(c)(5)

(c) Chains and chain slings.

(5) All repairs to chains shall be made under qualified supervision. Links or portions of the chain found to be defective as described in paragraph (d) of this section shall be replaced by links having proper dimensions and made of material similar to that of the chain. Before repaired chains are returned to service, they shall be proof tested to the proof test load recommended by the manufacturer.

USE OF GEAR
1917.66(i)

(i) An individual who is familiar with the signal code in use shall be assigned to act as a signalman when the hoist operator cannot see the load being handled. Communications shall be made by means of clear and distinct visual or auditory signals except that verbal signals shall not be permitted.

QUALIFICATIONS OF OPERATORS
1917.67(a)

(a) Only those employees who understand the signs, notices, and operating instructions, and are familiar with the signal code in use, shall be permitted to operate a crane, winch, or other power operated hoisting apparatus.

INTERNAL COMBUSTION ENGINES, OTHER THAN SHIP'S EQUIPMENT
1917.76(c)

(c) When internal combustion engines on vehicles, such as forklifts and mobile cranes, or on portable equipment such as fans, generators, and pumps exhaust into the atmosphere below decks, the competent person shall make tests of the carbon monoxide content of the atmosphere as frequently as conditions require to ensure that dangerous concentrations do not develop. Employees shall be removed from the compartment involved when the carbon monoxide concentration exceeds 50 parts per million (0.005%). The employer shall use blowers sufficient in size and number and so arranged as to maintain the concentration below this allowable limit before work is resumed.

RESPIRATORY PROTECTION
1917.82(a)(4)

(a) General.

(4) Employees required to use respiratory protective equipment approved for use in atmospheres immediately dangerous to life shall be thoroughly trained in its use. Employees required to use other types of respiratory protective equipment shall be instructed in the use and limitations of such equipment.

1917.82(b)(4)

(b) Protection in atmospheres immediately dangerous to life.

(4) In the vicinity of each vessel in which there is a danger of employees being exposed to an atmosphere immediately dangerous to life the employer shall have on hand and ready for use respiratory protective equipment approved for such use. When such equipment is required, one or more persons shall be thoroughly trained in the use of the equipment.

Part 1918—Longshoring

VENTILATION AND ATMOSPHERIC CONDITIONS
1918.93(a)(1)(i)

(a) Ventilation requirements with respect to carbon monoxide.

(1)(i) When internal combustion engines exhaust into a hold, an intermediate deck, or any other compartment, the employer shall see that tests of the carbon monoxide content of the atmosphere are made with such frequency as is found by test to be necessary in the type and location of the operation, and under the conditions existing, to insure that dangerous concentrations do not develop. Such tests shall be made in the area in which employees are working, by persons competent in the use of the test equipment and procedure. Where operations are located in a deep tank or refrigerated compartment, the first test shall be made within one-half hour of the time the machine(s) start.

FIRST AID AND LIFE SAVING EQUIPMENT
1918.96(a)

(a) Unless a first aid room is close at hand and a qualified attendant is prepared to render first aid to employees on behalf of the employer, the employer shall furnish a first aid kit for each vessel on which work is being performed, except that when work is being performed on more than one small vessel at one pier only one kit shall be required. The kit shall be kept in the immediate vicinity of the vessel and at least one employee holding a currently valid first aid certificate shall be close at hand.

QUALIFICATION OF MACHINERY OPERATORS
1918.97(a)

(a) Only those employees considered by the employer to be competent by reason of training or experience, and who understand the signs, notices, and operating instructions and are familiar with the signal code in use shall be permitted to operate a crane, winch or other power-operated hoisting apparatus, or any power-operated vehicle, or to give signals to the operator of any hoisting apparatus.

RESPIRATORY PROTECTION
1918.102(a)(4)

(a) General.

(4) Employees required to use respiratory protective equipment shall be instructed in its use.

Construction Training Requirements

The following training requirements have been excerpted from Part 1926 of Title 29, Code of Federal Regulations. Note that in addition to these requirements, Part 1910, relating to general industry (beginning on page 1), also contains applicable training standards.

Subject and Standard Number	Training Requirement
GENERAL SAFETY AND HEALTH PROVISIONS	
1926.20(b)(2) and (4)	(b) Accident prevention responsibilities. (2) Such programs [as may be necessary to comply with this part] shall provide for frequent and regular inspections of the job sites, materials, and equipment to be made by competent persons [capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who have authorization to take prompt corrective measures to eliminate them] designated by the employers. (4) The employer shall permit only those employees qualified [one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project] by training or experience to operate equipment and machinery.
SAFETY TRAINING AND EDUCATION	
1926.21(a)	(a) General requirements. The Secretary shall, pursuant to section 107(f) of the Act, establish and supervise programs for the education and training of employers and employees in the recognition, avoidance and prevention of unsafe conditions in employments covered by the Act.
1926.21(b)(1) through (6)	(b) Employer responsibility. (1) The employer should avail himself of the safety and health training programs the Secretary provides. (2) The employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury. (3) Employees required to handle or use poisons, caustics, and other harmful substances shall be instructed regarding the safe handling and use, and be made aware of the potential hazards, personal hygiene, and personal protective measures required.

(4) In job site areas where harmful plants or animals are present, employees who may be exposed shall be instructed regarding the potential hazards and how to avoid injury, and the first aid procedures to be used in the event of injury.

(5) Employees required to handle or use flammable liquids, gases, or toxic materials shall be instructed in the safe handling and use of these materials and made aware of the specific requirements contained in Subparts D, F, and other applicable subparts of this part.

(6) (i) All employees required to enter into confined or enclosed spaces shall be instructed as to the nature of the hazards involved, the necessary precautions to be taken, and in the use of protective and emergency equipment required. The employer shall comply with any specific regulations that apply to work in dangerous or potentially dangerous areas.

(6) (ii) For purposes of subdivision (i) of this subparagraph, "confined or enclosed space" means any space having a limited means of egress, which is subject to the accumulation of toxic or flammable contaminants or has an oxygen deficient atmosphere. Confined or enclosed spaces include, but are not limited to, storage tanks, process vessels, bins, boilers, ventilation or exhaust ducts, sewers, underground utility vaults, tunnels, pipelines, and open top spaces more than 4 feet in depth such as pits, tubs, vaults, and vessels.

MEDICAL SERVICES AND FIRST AID
1926.50(c)

(c) In the absence of an infirmary, clinic, hospital, or physician that is reasonably accessible in terms of time and distance to the worksite which is available for the treatment of injured employees, a person who has a valid certificate in first aid training from the U.S. Bureau of Mines, the American Red Cross, or equivalent training that can be verified by documentary evidence, shall be available at the worksite to render first aid.

IONIZING RADIATION
1926.53(b)

(b) Any activity which involves the use of radioactive materials or X-rays, whether or not under license from the Atomic Energy Commission, shall be performed by competent persons specially trained in the proper and safe operation of such equipment. In the case of materials used under Commission license, only persons actually licensed, or competent persons under the direction and supervision of the licensee, shall perform such work.

NONIONIZING RADIATION
1926.54(a) and (b)

(a) Only qualified and trained employees shall be assigned to install, adjust and operate laser equipment.

(b) Proof of qualification of the laser equipment operator shall be available and in possession of the operator at all times.

GASES, VAPORS, FUMES, DUSTS, AND MISTS
1926.55(b)

(b) To achieve compliance with paragraph (a) of this section, administrative or engineering controls must first be implemented whenever feasible. When such controls are not feasible to achieve full compliance, protective equipment or other protective measures shall be used to keep the exposure of employees to air contaminants within the limits prescribed in this section. Any equipment and technical measures used for this purpose must first be approved for each particular use by a competent industrial hygienist or other technically qualified person. Whenever respirators are used, their use shall comply with §1926.103.

HEARING PROTECTION

1926.101(b)

(b) Ear protective devices inserted in the ear shall be fitted or determined individually by competent persons.

RESPIRATORY PROTECTION

1926.103(c)(1)

(c) Selection, issuance, use and care of respirators.

(1) Employees required to use respiratory protective equipment approved for use in atmospheres immediately dangerous to life shall be thoroughly trained in its use. Employees required to use other types of respiratory protective equipment shall be instructed in the use and limitations of such equipment.

FIRE PROTECTION

1926.150(a)(5)

(a) General requirements.

(5) As warranted by the project, the employer shall provide a trained and equipped firefighting organization (Fire Brigade) to assure adequate protection to life. ["Fire brigade" means an organized group of employees that are knowledgeable, trained, and skilled in the safe evacuation of employees during emergency situations and in assisting in firefighting operations.]

1926.150(c)(1)(viii)

(c) Portable firefighting equipment. (1) Fire extinguishers and small hose lines.

(viii) Portable fire extinguishers shall be inspected periodically and maintained in accordance with Maintenance and Use of Portable Fire Extinguishers, NFPA No. 10A–1970.

[From ANSI Standard 10A–1970] "1110. The owner or occupant of a property in which fire extinguishers are located has an obligation for the care and use of these extinguishers at all times. By doing so, he is contributing to the protection of life and property. The nameplate(s) and instruction manual should be read and thoroughly understood by all persons who may be expected to use extinguishers.

"1120. To discharge this obligation he should give proper attention to the inspection, maintenance, and recharging of this fire protective equipment. He should also train his personnel in the correct use of fire extinguishers on the different types of fires which may occur on his property.

"3020. Persons responsible for performing maintenance operations come from three major groups:

"Trained industrial safety or maintenance personnel.

"Extinguisher service agencies.

"Individual owners (e.g., self-employed. . .)."

SIGNALING

1926.201(a)(2)

(a) Flagmen.

(2) Signaling directions by flagmen shall conform to American National Standards Institute D6.1–1971, Manual on Uniform Traffic Control Devices for Streets and Highways.

POWER-OPERATED HANDTOOLS
1926.302(e)(1) and (12)

(e) Powder-actuated tools.

(1) Only employees who have been trained in the operation of the particular tool in use shall be allowed to operate a powder-actuated tool.

(12) Powder-actuated tools used by employees shall meet all other applicable requirements of American National Standards Institute, A10.3–1970, Safety Requirements for Explosive-Actuated Fastening Tools.

[From ANSI Standard A10.3-1970] "12. Authorized Instructor. 12.1 Only persons . . . trained and authorized by the tool manufacturer or by an authorized representative of the tool manufacturer shall be qualified to instruct and qualify operators for the manufacturer's powder-actuated tools.

"12.2 All authorized instructors shall have read and be familiar with this standard, and shall be capable of the following: . . . (5) Training and testing of operators prior to issuing a Qualified Operator's Card.

"12.4 A list of all manufacturer-authorized instructors authorized to instruct and qualify operators shall be maintained by the tool manufacturer and be made available to the regulating body having jurisdiction upon request.

"13. Qualified Operator. 13.1 The operator . . . shall be trained by an authorized instructor to be familiar with the provisions of this standard and the instructions provided by the manufacturer for operation and maintenance, and to be capable of the following:

"(1) Cleaning the tool correctly.

"(2) Recognizing any worn or damaged parts or defective operation.

"(3) Recognizing the number-color code system used in this standard to identify power load levels. In the event the operator is unable to distinguish the colors used, he shall be given special instruction to enable him to avoid error.

"(4) Using the tool correctly within the limitations of its use and demonstrating his competence by operating the tool in the presence of the instructor.

"13.2 After training, the operator shall, to substantiate his competency, satisfactorily complete a written examination provided by the manufacturer of the tool."

WOODWORKING TOOLS
1926.304(f)

(f) Other requirements. All woodworking tools and machinery shall meet other applicable requirements of American National Standards Institute, 01.1–1961, Safety Code for Woodworking Machinery.

[From ANSI Standard 01.1–1961] "9.7 Selection and Training of Operators. Before a worker is permitted to operate any woodworking machine, he shall receive instructions in the hazards of the machine and the safe method of its operation. Refer to A9.7 of the Appendix.

"A9.7 Selection and Training of Operators. Operation of Machines, Tools, and Equipment. General.

"(1) Learn the machine's applications and limitations, as well as the specific potential hazards peculiar to this machine. Follow available operating instructions and safety rules carefully.

"(2) Keep working area clean and be sure adequate lighting is available.

"(3) Do not wear loose clothing, gloves, bracelets, necklaces, or ornaments. Wear face, eye, ear, respiratory, and body protection devices, as indicated for the operation or environment.

"(4) Do not use cutting tools larger or heavier than the machine is designed to accommodate. Never operate a cutting tool at greater speed than recommended.

"(5) Keep hands well away from saw blades and other cutting tools. Use a push stock or push block to hold or guide the work when working close to cutting tool.

"(6) Whenever possible, use properly locked clamps, jig, or vise to hold the work.

"(7) Combs (feather boards) shall be provided for use when an applicable guard cannot be used.

"(8) Never stand directly in line with a horizontally rotating cutting tool. This is particularly true when first starting a new tool, or a new tool is initially installed on the arbor.

"(9) Be sure the power is disconnected from the machine before tools are serviced.

"(10) Never leave the machine with the power on.

"(11) Be positive that hold-downs and antikickback devices are positioned properly, and that the workpiece is being fed through the cutting tool in the right direction.

"(12) Do not use a dull, gummy, bent, or cracked cutting tool.

"(13) Be sure that keys and adjusting wrenches have been removed before turning power on.

"(14) Use only accessories designed for the machine.

"(15) Adjust the machine for minimum exposure of cutting tool necessary to perform the operation."

GAS WELDING AND CUTTING

1926.350(d)(1) through (6)

(d) Use of fuel gas. The employer shall thoroughly instruct employees in the safe use of fuel gas as follows:

(1) Before a regulator to a cylinder valve is connected, the valve shall be opened slightly and closed immediately. (This action is generally termed "cracking" and is intended to clear the valve of dust or dirt that might otherwise enter the regulator.) The person cracking the valve shall stand to one side of the outlet, not in front of it. The valve of a fuel gas cylinder shall not be cracked where the gas would reach welding work, sparks, flame, or other possible sources of ignition.

(2) The cylinder valve shall always be opened slowly to prevent damage to the regulator. For quick closing, valves on fuel gas cylinders shall not be opened more than 1½ turns. When a special wrench is required, it shall be left in position on the stem of the valve while the cylinder is in use so that the fuel gas flow can be shut off quickly in case of an emergency. In the case of manifolded or coupled cylinders, at least one such wrench shall always be available for immediate use. Nothing shall be placed on top of a fuel gas cylinder, when in use, which may damage the safety device or interfere with the quick closing of the valve.

(3) Fuel gas shall not be used from cylinders through torches or other devices which are equipped with shutoff valves without reducing the pressure through a suitable regulator attached to the cylinder valve or manifold.

(4) Before a regulator is removed from a cylinder valve, the cylinder valve shall always be closed and the gas released from the regulator.

(5) If, when the valve on a fuel gas cylinder is opened, there is found to be a leak around the valve stem, the valve shall be closed and the gland nut tightened. If this action does not stop the leak, the use of the cylinder shall be discontinued, and it shall be properly tagged and removed from the work area. In the event that fuel gas should leak from the cylinder valve, rather than from the valve stem, and the gas cannot be shut off, the cylinder shall be properly tagged and removed from the work area. If a regulator attached to a cylinder valve will effectively stop a leak through the valve seat, the cylinder need not be removed from the work area.

(6) If a leak should develop at a fuse plug or other safety device, the cylinder shall be removed from the work area.

1926.350(j)

(j) Additional rules. For additional details not covered in this subpart, applicable technical portions of American National Standards Institute, Z49.1–1967, Safety in Welding and Cutting, shall apply.

[From ANSI Standard Z49.1–1967] "9.5.2.6 Fire Watch Duties. Fire watchers shall be trained in the use of fire extinguishing equipment. They shall be familiar with facilities for sounding an alarm in the event of a fire. They shall watch for fires in all exposed areas, try to extinguish them only when obviously within the capacity of the equipment available, or otherwise sound the alarm. A fire watch shall be maintained for at least a half hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires."

ARC WELDING AND CUTTING

1926.351(d)(1) through (5)

(d) Operating instructions. Employers shall instruct employees in the safe means of arc welding and cutting as follows:

(1) When electrode holders are to be left unattended, the electrodes shall be removed and the holders shall be so placed or protected that they cannot make electrical contact with employees or conducting objects.

(2) Hot electrode holders shall not be dipped in water; to do so may expose the arc welder or cutter to electric shock.

(3) When the arc welder or cutter has occasion to leave his work or to stop work for any appreciable length of time, or when the arc welding or cutting machine is to be moved, the power supply switch to the equipment shall be opened.

(4) Any faulty or defective equipment shall be reported to the supervisor.

(5) Other requirements, as outlined in Article 630, National Electrical Code, NFPA 70–1971; ANSI C1–1971 (Rev. of 1968), Electric Welders, shall be used when applicable.

FIRE PREVENTION

1926.352(e)

(e) When the welding, cutting, or heating operation is such that normal fire prevention precautions are not sufficient, additional personnel shall be assigned to guard against fire while the actual welding, cutting, or heating operation is being performed, and for a sufficient period of time after completion of the work to ensure that no possibility of fire exists. Such personnel shall be instructed as to the specific anticipated fire hazards and how the firefighting equipment provided is to be used.

WELDING, CUTTING AND HEATING IN WAY OF PRESERVATIVE COATINGS

1926.354(a)

(a) Before welding, cutting, or heating is commenced on any surface covered by a preservative coating whose flammability is not known, a test shall be made by a competent person to determine its flammability. Preservative coatings shall be considered to be highly flammable when scrapings burn with extreme rapidity.

GROUND-FAULT PROTECTION

1926.400(h)(3)(ii)

(h) Ground-fault protection. (3) Assured equipment grounding conductor program.

(ii) The employer shall designate one or more competent persons (as defined in §1926.32(f)) [one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them] to implement the program.

SCAFFOLDING

1926.451(a)(3)

(a) General requirements.

(3) No scaffold shall be erected, moved, dismantled, or altered except under the supervision of competent persons.

1926.451(b)(16)

(b) Wood pole scaffolds.

(16) All wood pole scaffolds 60 feet or less in height shall be constructed and erected in accordance with Tables L–4 to 10. If they are over 60 feet in height, they shall be designed by a qualified engineer competent in this field, and it shall be constructed and erected in accordance with such design.

1926.451(c)(4) and (5)

(c) Tube and coupler scaffolds.

(4) Tube and coupler scaffolds shall be limited in heights and working levels to those permitted in Tables L–10, 11, and 12. Drawings and specifications of all tube and coupler

scaffolds above the limitations in Tables L–10, 11, and 12 shall be designed by a qualified engineer competent in this field.

(5) All tube and coupler scaffolds shall be constructed and erected to support four times the maximum intended loads, as set forth in Tables L–10, 11, and 12, or as set forth in the specifications by a licensed professional engineer competent in this field.

1926.451(d)(9)

(d) Tubular welded frame scaffolds.

(9) Drawings and specifications for all frame scaffolds over 125 feet in height above the base plates shall be designed by a registered professional engineer.

1926.451(g)(3)

(g) Outrigger scaffolds.

(3) Unless outrigger scaffolds are designed by a registered professional engineer competent in this field, they shall be constructed and erected in accordance with Table L–13. Outrigger scaffolds, designed by a registered professional engineer, shall be constructed and erected in accordance with such design.

1926.451(h)(6) and (14)

(h) Masons' adjustable multiple-point suspension scaffolds.

(6) Where the overhang exceeds 6 feet 6 inches, outrigger beams shall be composed of stronger beams or multiple beams and be installed under the supervision of a competent person.

(14) Each scaffold shall be installed or relocated under the supervision of a competent person.

1926.451(k)(10)

(k) Single-point adjustable suspension scaffolds.

(10) For additional details not covered in this paragraph, applicable technical portions of American National Standards Institute, A120.1–1970, Power-Operated Devices for Exterior Building Maintenance Powered Platforms, shall be used.

[From ANSI Standard A120.1–1970] "31.1 Qualified Operators. Powered platforms shall be operated only by qualified persons who have been instructed in the operation and in the inspection, with respect to safe operating condition of the particular powered platform to be operated."

CRANES AND DERRICKS

1926.550(a)(1), (5), and (6)

(a) General requirements.

(1) The employer shall comply with the manufacturer's specifications and limitations applicable to the operation of any and all cranes and derricks. Where manufacturer's specifications are not available, the limitations assigned to the equipment shall be based on the determinations of a qualified engineer competent in this field and such determinations will be appropriately documented and recorded. Attachments used with cranes shall not exceed the capacity, rating, or scope recommended by the manufacturer.

(5) The employer shall designate a competent person who shall inspect all machinery and equipment prior to each use, and during use, to make sure it is in safe operating condition. Any deficiencies shall be repaired, or defective parts replaced, before continued use.

(6) A thorough, annual inspection of the hoisting machinery shall be made by a competent person, or by a government or private agency recognized by the U.S. Department of Labor. The employer shall maintain a record of the dates and results of inspections for each hoisting machine and piece of equipment.

MATERIAL HOISTS, PERSONNEL HOISTS, AND ELEVATORS

1926.552(a)(1)

(a) General requirements.

(1) The employer shall comply with the manufacturer's specifications and limitations applicable to the operation of all hoists and elevators. Where manufacturer's specifications are not available, the limitations assigned to the equipment shall be based on the determinations of a professional engineer competent in the field.

1926.552(b)(7)

(b) Material hoists.

(7) All material hoist towers shall be designed by a licensed professional engineer.

1926.552(c)(15) and (17)(i)

(c) Personnel hoists.

(15) Following assembly and erection of hoists, and before being put in service, an inspection and test of all functions and safety devices shall be made under the supervision of a competent person. A similar inspection and test is required following major alteration of an existing installation. All hoists shall be inspected and tested at not more than 3-month intervals. Records shall be maintained and kept on file for the duration of the job.

(17) (i) Personnel hoists used in bridge tower construction shall be approved by a registered professional engineer and erected under the supervision of a qualified engineer competent in this field.

MATERIAL HANDLING EQUIPMENT
1926.602(c)(1)(vi)

(c) Lifting and hauling equipment (other than equipment covered under Subpart N of this part).

(1)(vi) All industrial trucks in use shall meet the applicable requirements of design, construction, stability, inspection, testing, maintenance, and operation, as defined in American National Standards Institute B56.1–1969, Safety Standards for Powered Industrial Trucks.

[From ANSI Standard B56.1–1969] "602 Operator Training. Only trained and authorized operators shall be permitted to operate a powered industrial truck. Methods shall be devised to train operators in the safe operation of powered industrial trucks. Badges or other visual indication of the operators' authorization should be displayed at all times during work period."

SITE CLEARING
1926.604(a)(1)

(a) General requirements.

(1) Employees engaged in site clearing shall be protected from hazards of irritant and toxic plants and suitably instructed in the first aid treatment available.

MARINE OPERATIONS AND EQUIPMENT
1926.605(d)(1)

(d) First-aid and lifesaving equipment.

(1) Provisions for rendering first aid and medical assistance shall be in accordance with Subpart D of this part.

GENERAL PROTECTION REQUIREMENTS (EXCAVATIONS, TRENCHING, AND SHORING)
1926.650(i)

(i) Daily inspections of excavations shall be made by a competent person. If evidence of possible cave-ins or slides is apparent, all work in the excavation shall cease until the necessary precautions have been taken to safeguard the employees.

SPECIFIC EXCAVATION REQUIREMENTS
1926.651(d), (f), (k), (o), and (x)

(d) Excavations shall be inspected by a competent person after every rainstorm or other hazard-increasing occurrence, and the protection against slides and cave-ins shall be increased if necessary.

(f) Supporting systems; i.e., piling, cribbing, shoring, etc., shall be designed by a qualified person and meet accepted engineering requirements [requirements or practices which are compatible with standards required by a registered architect, a registered professional engineer, or other duly licensed or recognized authority]. When tie rods are used to restrain the top of sheeting or other retaining systems, the rods shall be securely anchored well back of the angle of repose. When tight sheeting or sheet piling is used, full loading due to ground water table shall be assumed, unless prevented by weep holes or drains or other means. Additional stringers, ties, and bracing shall be provided to allow for any necessary temporary removal of individual supports.

(k) Support systems shall be planned and designed by a qualified person when excavation is in excess of 20 feet in depth, adjacent to structures or improvements, or subject to vibration or ground water.

(o) If the stability of adjoining buildings or walls is endangered by excavations, shoring, bracing, or underpinning shall be provided as necessary to insure their safety. Such shoring, bracing, or underpinning shall be inspected daily or more often, as conditions warrant, by a competent person and the protection effectively maintained.

(x) Where ramps are used for employees or equipment, they shall be designed and constructed by qualified persons in accordance with accepted engineering requirements.

FORMS AND SHORING

1926.701(a)(4)

(a) General provisions.

(4) Imposition of any construction loads on the partially completed structure shall not be permitted unless such loading has been considered in the design and approved by the engineer-architect.

1926.701(d)(3)

(d) Single post shores.

(3) Whenever single post shores are used in more than one tier, the layout shall be designed and inspected by a structural engineer.

BOLTING, RIVETING, FITTING-UP, AND PLUMBING-UP

1926.752(d)(4)

(d) Plumbing-up.

(4) Plumbing-up guys shall be removed only under the supervision of a competent person.

TUNNELS AND SHAFTS

1926.800(c)(2)(iii) and (iv)

(c) Air quality and ventilation. (2) Ventilation.

(iii) When there has been a failure of ventilation and ventilation has been restored in a reasonable time, all places where flammable gas may have accumulated shall be examined by a competent person and determined to be free of flammable gas before power is restored and work resumed.

(iv) When the main fan or fans have been shut down with all employees out of the adit, tunnel, or shaft, no employee, other than those qualified to examine the adit, tunnel, or shaft, or other authorized employee, shall go underground until the fans have been started, the work areas examined for gas and other hazards, and declared safe.

1926.800(e)(1)(xii)

(e) Fire prevention and control. (1) General.

(xii) At tunnel operations, employing 25 or more employees at one time underground, at least two rescue crews (10 employees divided between shifts) shall be trained annually in rescue procedures, in the use, care, and limitations of oxygen breathing apparatus, and the use and maintenance of firefighting equipment. Not less than one crew (5 employees) shall be trained at smaller operations.

1926.800(k)(1)

(k) Haulage.

(1) Equipment that is to be used during a shift shall be inspected by a competent person each shift. Equipment defects affecting safety shall be corrected before the equipment is used.

COMPRESSED AIR

1926.803(a)(1) and (2)

(a) General provisions.

(1) There shall be present, at all times, at least one competent person designated by and representing the employer, who shall be familiar with this subpart in all respects, and responsible for full compliance with these and other applicable subparts.

(2) Every employee shall be instructed in the rules and regulations which concern his safety or the safety of others.

1926.803(b)(1) and (10)(xii)

(b) Medical attendance, examination, and regulations.

(1) There shall be retained one or more licensed physicians familiar with and experienced in the physical requirements and the medical aspects of compressed air work and the treatment of decompression illness. He shall be available at all times while work is in progress in order to provide medical supervision of employees employed in compressed air work. He shall himself be physically qualified and be willing to enter a pressurized environment.

(10) The medical lock shall:

(xii) Be in constant charge of an attendant under the direct control of the retained physician. The attendant shall be trained in the use of the lock and suitably instructed regarding steps to be taken in the treatment of employee exhibiting symptoms compatible with a diagnosis of decompression illness.

1926.803(e)(1)

(e) Compression.

(1) Every employee going under air pressure for the first time shall be instructed on how to avoid excessive discomfort.

1926.803(h)(1)

(h) Compressor plant and air supply.

(1) At all times there shall be a thoroughly experienced, competent, and reliable person on duty at the air control valves as a gauge tender who shall regulate the pressure in the working areas. During tunneling operations, one gauge tender may regulate the pressure in not more than two headings: Provided, that the gauge and controls are all in one location. In caisson work, there shall be a gauge tender for each caisson.

PREPARATORY OPERATIONS

1926.850(a)

(a) Prior to permitting employees to start demolition operations, an engineering survey shall be made, by a competent person, of the structure to determine the condition of the framing, floors, and walls, and possibility of unplanned collapse of any portion of the structure. Any adjacent structure where employees may be exposed shall also be similarly checked. The employer shall have in writing evidence that such a survey has been performed.

CHUTES

1926.852(c)

(c) A substantial gate shall be installed in each chute at or near the discharge end. A competent employee shall be assigned to control the operation of the gate, and the backing and loading of trucks.

MECHANICAL DEMOLITION

1926.859(g)

(g) During demolition, continuing inspections by a competent person shall be made as the work progresses to detect hazards resulting from weakened or deteriorated floors, or walls, or loosened material. No employee shall be permitted to work where such hazards exist until they are corrected by shoring, bracing, or other effective means.

GENERAL PROVISIONS (BLASTING AND USE OF EXPLOSIVES)

1926.900(a)

(a) The employer shall permit only authorized and qualified persons to handle and use explosives.

1926.900(k)(3)(i)

(k)(3)(i) The prominent display of adequate signs, warning against the use of mobile radio transmitters, on all roads within 1,000 feet of blasting operations. Whenever adherence to the 1,000-foot distance would create an operational handicap, a competent person shall be consulted to evaluate the particular situation, and alternative provisions may be made which are adequately designed to prevent any premature firing of electric blasting caps. A description of any such alternatives shall be reduced to writing and shall be certified as meeting the purposes of this subdivision by the competent person consulted. The description shall be maintained at the construction site during the duration of the work, and shall be available for inspection by representatives of the Secretary of Labor.

1926.900(q)

(q) All loading and firing shall be directed and supervised by competent persons thoroughly experienced in this field.

BLASTER QUALIFICATIONS

1926.901(c), (d), and (e)

(c) A blaster shall be qualified, by reason of training, knowledge, or experience, in the field of transporting, storing, handling, and use of explosives, and have a working knowledge of State and local laws and regulations which pertain to explosives.

(d) Blasters shall be required to furnish satisfactory evidence of competency in handling explosives and performing in a safe manner the type of blasting that will be required.

(e) The blaster shall be knowledgeable and competent in the use of each type of blasting method used.

SURFACE TRANSPORTATION OF EXPLOSIVES

1926.902(b) and (i)

(b) Motor vehicles or conveyances transporting explosives shall only be driven by, and be in the charge of, a licensed driver who is physically fit. He shall be familiar with the local, State, and Federal regulation governing the transportation of explosives.

(i) Each vehicle used for transportation of explosives shall be equipped with a fully charged fire extinguisher, in good condition. An Underwriters Laboratory-approved extinguisher of not less than 10-ABC rating will meet the minimum requirement. The driver shall be trained in the use of the extinguisher on his vehicle.

FIRING THE BLAST

1926.909(a)

(a) A code of blasting signals equivalent to Table U–1, shall be posted on one or more conspicuous places at the operation, and all employees shall be required to familiarize themselves with the code and conform to it. Danger signs shall be placed at suitable locations.

Table U–1

WARNING SIGNAL—A 1-minute series of long blasts 5 minutes prior to blast signal.
BLAST SIGNAL—A series of short blasts 1 minute prior to the shot.
ALL CLEAR SIGNAL—A prolonged blast following the inspection of blast area.

GENERAL REQUIREMENTS (POWER TRANSMISSION AND DISTRIBUTION)

1926.950(d)(1)(ii), (vi), and (vii)

(d) Deenergizing lines and equipment.

(1) When deenergizing lines and equipment operated in excess of 600 volts, and the means of disconnecting from electric energy is not visibly open or visibly locked out, the provisions of subdivisions (i) through (vii) of this subparagraph shall be complied with:

(ii) Notification and assurance from the designated employee [a qualified person delegated to perform specific duties under the conditions existing] shall be obtained that:

(a) All switches and disconnectors through which electric energy may be supplied to the particular section of line or equipment to be worked have been deenergized;

(b) All switches and disconnectors are plainly tagged indicating that men are at work;

(c) And that where design of such switches and disconnectors permits, they have been rendered inoperable.

(vi) When more than one independent crew requires the same line or equipment to be deenergized, a prominent tag for each such independent crew shall be placed on the line or equipment by the designated employee in charge.

(vii) Upon completion of work on deenergized lines or equipment, each designated employee in charge shall determine that all employees in his crew are clear, that protective grounds installed by his crew have been removed, and he shall report to the designated authority that all tags protecting his crew may be removed. [N.B.: Designated employee means a qualified person delegated to perform specific duties under the conditions existing.]

1926.950(d)(2)(ii)

(2) When a crew working on a line or equipment can clearly see that the means of disconnecting from electric energy are visibly open or visibly locked-out, the provisions of subdivisions (i) and (ii) of this subparagraph shall apply:

(ii) Upon completion of work on deenergized lines or equipment, each designated employee in charge shall determine that all employees in his crew are clear, that protective grounds installed by his crew have been removed, and he shall report to the designated authority that all tags protecting his crew may be removed.

1926.950(e)(1) and (2)

(e) Emergency procedures and first aid.

(1) The employer shall provide training or require that his employees are knowledgeable and proficient in:

(i) Procedures involving emergency situations, and

(ii) First-aid fundamentals including resuscitation.

(2) In lieu of subparagraph (1) of this paragraph the employer may comply with the provisions of §1926.50(c) regarding first-aid requirements.

OVERHEAD CRANES

1926.955(b)(3)(i)

(b) Metal tower construction.

(3)(i) A designated employee [a qualified person delegated to perform specific duties under the conditions existing] shall be used in directing mobile equipment adjacent to footing excavations.

1926.955(b)(8)

(8) A designated employee [a qualified person delegated to perform specific duties under the conditions existing] shall be utilized to determine that required clearance is maintained in moving equipment under or near energized lines.

1926.955(d)(1)

(d) Stringing adjacent to energized lines.

(1) Prior to stringing parallel to an existing energized transmission line a competent determination shall be made to ascertain whether dangerous induced voltage buildups will occur, particularly during switching and ground fault conditions. When there is a possibility that such dangerous induced voltage may exist the employer shall comply with the provisions of subparagraphs (2) through (9) of this paragraph in addition to the provisions of paragraph (c) of this § 1926.955, unless the line is worked as energized.

1926.955(e)(1) and (4)

(e) Live-line barehand work.

(1) Employees shall be instructed and trained in the live-line bare-hand technique and the safety requirements pertinent thereto before being permitted to use the technique on energized circuits.

(4) All work shall be personally supervised by a person trained and qualified to perform live-line bare-hand work.

UNDERGROUND LINES

1926.956(b)(1)

(b) Work in manholes.

(1) While work is being performed in manholes, an employee shall be available in the immediate vicinity to render emergency assistance as may be required. This shall not preclude the employee in the immediate vicinity from occasionally entering a manhole to provide assistance, other than emergency. This requirement does not preclude a qualified employee [a person who by reason of experience or training is familiar with the operation to be performed and the hazards involved], working alone, from entering for brief periods of time, a manhole where energized cables or equipment are in service, for the purpose of inspection, housekeeping, taking readings, or similar work if such work can be performed safely.

CONSTRUCTION IN ENERGIZED SUBSTATIONS

1926.957(a)(1)

(a) Work near energized equipment facilities.

(1) When construction work is performed in an energized substation, authorization shall be obtained from the designated, authorized person [a qualified person delegated to perform specific duties under the conditions existing] before work is started.

1926.957(d)(1)

(d) Control panels.

(1) Work on or adjacent to energized control panels shall be performed by designated employees [qualified persons delegated to perform specific duties under the conditions existing].

1926.957(e)(1)

(e) Mechanized equipment.

(1) Use of vehicles, gin poles, cranes, and other equipment in restricted or hazardous areas shall at all times be controlled by designated employees [qualified persons delegated to perform specific duties under the conditions existing].

Agricultural Training Requirements

The following training requirements have been excerpted from Part 1928 of Title 29, Code of Federal Regulations. Note that in addition to these requirements, Part 1910, relating to general industry (beginning on page 1), also contains applicable training standards.

Subject and Standard Number	Training Requirement
ROLL-OVER PROTECTIVE STRUCTURES (ROPS) FOR TRACTORS USED IN AGRICULTURAL OPERATIONS 1928.51(d)	(d) Operating instructions. Every employee who operates an agricultural tractor shall be informed of the operating practices contained in Exhibit A of this part and of any other practices dictated by the work environment. Such information shall be provided at the time of initial assignment and at least annually thereafter. **Exhibit A—Employee Operating Instructions** 1. Securely fasten your seat belt if the tractor has a ROPS. 2. Where possible, avoid operating the tractor near ditches, embankments, and holes. 3. Reduce speed when turning, crossing slopes, and on rough, slick, or muddy surfaces. 4. Stay off slopes too steep for safe operation. 5. Watch where you are going, especially at row ends, on roads, and around trees. 6. Do not permit others to ride. 7. Operate the tractor smoothly—no jerky turns, starts, or stops. 8. Hitch only to the drawbar and hitch points recommended by tractor manufacturers. 9. When tractor is stopped, set brakes securely and use park lock if available.
GUARDING OF FARM FIELD EQUIPMENT, FARMSTEAD EQUIPMENT, AND COTTON GINS 1928.57(a)(6) (i) through (v)	(a) General. (6) Operating instructions. At the time of initial assignment and at least annually thereafter, the employer shall instruct every employee in the safe operation and servicing of all covered equipment with which he is or will be involved, including at least the following safe operating practices:

(i) Keep all guards in place when the machine is in operation;

(ii) Permit no riders on farm field equipment other than persons required for instruction or assistance in machine operation;

(iii) Stop engine, disconnect the power source, and wait for all machine movement to stop before servicing, adjusting, cleaning, or unclogging the equipment, except where the machine must be running to be properly serviced or maintained, in which case the employer shall instruct employees as to all steps and procedures which are necessary to safely service or maintain the equipment;

(iv) Make sure everyone is clear of machinery before starting the engine, engaging power, or operating the machine;

(v) Lock out electrical power before performing maintenance or service on farmstead equipment.

1928.57(d)(1)(viii)

(d) Cotton ginning equipment. (1) Power transmission components.

(viii) In power plants and power development rooms where access is limited to authorized personnel, guard railings may be used in place of guards or guarding by location. Authorized employees having access to power plants and power development rooms shall be instructed in the safe operation and maintenance of the equipment in accordance with paragraph (a)(6) of this section.

Suggested Readings in Industrial Safety and Health Training

"OSHA Safety and Health Training Guidelines for General Industry" (PB-239-310/AS), National Technical Information Service, Springfield, VA

"OSHA Safety and Health Training Guidelines for Maritime Employment" (PB-239-311/AS), National Technical Information Service, Springfield, VA

"OSHA Safety and Health Training Guidelines for Construction" (PB-239-312/AS), National Technical Information Service, Springfield, VA

Heyel, Carl, Ed., "The Foreman's Handbook," Pages 226-246 (esp. 239), 1967, McGraw-Hill Book Co., New York

Kirkpatrick, Donald L., "A Practical Guide for Supervisory Training and Development," Pages 158-161, 1971, Addison-Wesley Publishing Co., Reading, MA

Mager, Robert F., "Preparing Instructional Objectives," 1975, Fearon Publishers, Inc., Belmont, CA

"Supervisors Safety Manual," 1978, National Safety Council, Chicago, IL

OSHA Training Materials

Training materials produced by OSHA are available from the sources listed below. Give order number when inquiring about prices.

National Audiovisual Center
National Archives and Records Services
General Services Administration
Washington, DC 20409

Slide Programs

A Guide to Voluntary Compliance
Provides guidelines for developing systematic self-inspection procedures to help employers identify and correct workplace deficiencies. Includes a student manual, an instructor's guide, and 174 slides. (Order No. 005030) (See Government Printing Office list, on page 61 of this booklet, for Instructor's Curriculum Plan for this Guide.)

Safety and Health in Excavation and Trenching Operations
Special-emphasis instructional program stresses the problems and hazards in excavation and trenching operations. Includes an instructor's guide and 139 slides. (Order No. 689601)

Sloping, Shoring, and Shielding
One-day program consists of a classroom session and a practical "hands-on" workshop in procedures and techniques of construction shoring. Includes an instructor's manual, with outline for field exercise/workshop, and 60 slides. (Order No. 009863)

Construction Safety and Health Training
Thirty-hour course, designed to train and educate supervisory personnel and employees in safe work practices on construction jobs, covers all phases of construction safety and health. Includes five manuals and 466 slides. (Order No. 002057) (Manuals without slides may be purchased separately from the Government Printing Office; see GPO list on page 61 of this booklet.)

Occupational Health Training for Safety Compliance Officers
Eighty-hour program (designed for use at the OSHA Training Institute but useful to any safety professional needing occupational health training) contains four manuals, two instructor's guides, two student's manuals, and 523 slides. (Order No. 010413) Instructor's manuals (Order No. 010411) and student's manuals (Order No. 010410) can be ordered separately.

Longshoring Safety and Health
Thirty-hour course, designed to train and educate supervisors, managers, and employee representatives in safe work practices and specific safety and health hazards associated with longshoring, includes a two-volume instructor's guide, trainee manual, and 850 slides. (Order No. 008573) Trainee manual may be ordered separately. (Order No. 008591)

Tape Program

Audio Aid to OSHA Recordkeeping
An audiocassette and recordkeeping requirement booklet to aid those who must keep the records required by OSHA. (Order No. A00408/05)

Slide-Tape Programs

Longshoring Series: The programs listed below deal with job safety analysis (JSA) and operation safety analysis (OSA) of specific longshoring occupations. Each set contains a script, audiocassette, and slides.

Program Title	Order No.
Roll-On Roll-Off Operation (OSA)	008574
The Container Straddle Truck Operator (JSA)	008575
LASH Operation (OSA)	008643
The Carpenter (JSA)	008644
The Grain Operation (OSA)	008645
The Barge Worker (JSA)	008646
The Holdman (JSA)	008647
The Stuffer and Stripper (JSA)	008650
The Barge Operation (OSA)	008651
The Container Operation (OSA)	008652
The Winchman and the Hatchtender (JSA)	008653
Break Bulk Operation (OSA)	008654
Log Operation (OSA)	008655
The Forklift Operator (JSA)	008656
The Hook-Up Man (JSA)	008657
Semi-Tractor Operator (JSA)	008658
The Crane Operator (JSA)	008695

Agricultural Machine Guarding Standards Requirements
Explains the purpose and application of OSHA standards affecting the guarding of agricultural machinery. Includes script, audiocassette, and 61 slides. (Order No. 008426)

10-Hour Construction Safety and Health Course
This 10-hour narrated version of the 30-hour course (see National Audiovisual Center list) includes manual, ten 1-hour audiocassettes, and 290 slides. (Order No. 006405) Slides, manuals, and audiocassettes may be purchased separately.

Employer-Employee Rights and Responsibilities Under the Occupational Safety and Health Act
Promotes understanding of OSHA and of employer/employee rights and responsibilities. Covers OSHA/NIOSH structures and functions, standards, recordkeeping, special programs, inspections, citations, penalties, and voluntary compliance with the OSHAct. Includes instructor's guide, audiocassette, and 80 slides. (Order No. 009862)

An Orientation in Occupational Safety and Health for Federal Employees
Explains the Occupational Safety and Health Act and its applicability to the Federal worker. Includes script, audiocassette, and 122 slides. (Order No. 007678)

Office Safety and Health for Federal Employees
Deals with a wide range of safety and health hazards found in many office situations—sharp tools, slippery floors, inadequate lighting, flammable liquids, and poor ventilation. Provides information on fire prevention, first aid, materials handling, safe office layout, and many other topics. Includes 201 slides, audiocassettes, script, outline, and a suggested office checklist. (Order No. A00103)

Hazard Recognition Series: The following five programs were initially produced by Ohio State University and are now distributed by OSHA in somewhat revised form.

Walking-Working Surfaces
Deals with floor load limits, guard rails, stairways, exits, housekeeping, and drainage. Includes a course outline, instructor's guide, workbook, audiocassettes, and 88 slides. (Order No. 007512)

Ladders
Deals with the safe use of ladders, including fixed, portable, and job-made. Includes course outline, instructor's guide, workbook, audiocassettes, and 56 slides. (Order No. 007513)

Trenching
Deals with utility lines, cave-ins, angle of repose, soil composition, water, and weather. Includes course outline, instructor's guide, workbook, audiocassettes, and 94 slides. (Order No. 007516)

Scaffolds
Deals with built-up, rolling, and suspended scaffolds, and load capacity, guard rails, toe boards, and outrigger beams. Includes course outline, instructor's guide, workbook, audiocassettes, and 69 slides. (Order No. 007518)

Ventilation
Two-part program deals with basic principles of ventilation, dilution ventilation, and local exhaust systems. Includes a course outline, script, test form, audiocassettes, and 202 slides. (Order No. 010524)

Films

I Never Had an Accident in My . . .
Contains dramatic simulated accidents to alert meat workers in retail food stores to the hazards in their jobs and to make them aware of safety and health provisions that can protect them from job-related accidents. (18 min., 16mm, color, sound) (Order No. 009871)

Hand Signals for Agriculture
Introduces the new American Society of Agricultural Engineers uniform hand signals and illustrates the proper method of giving and recognizing these signals. Reminds farm and ranch machinery operators and crew members of the various dangerous situations they face daily. (14 min., 16mm, color, sound) (Order No. 008923)

Foundry Safety and Health Test
Assists foundry supervisors and their employees to identify and correct safety hazards in the workplace. Questions appear on the screen and time is allowed for participants to answer. As the correct answer appears, the narrator provides an explanation. (28 min., 16mm, color, sound) (Order No. 010170)

National Technical Information Service
U.S. Department of Commerce
Springfield, VA 22151

OSHA Safety and Health Training Guidelines for General Industry (PB-239-310/AS)
Covers 25 general industry operations, ranging from use of powered industrial trucks to storage of toxic substances.

OSHA Safety and Health Training Guidelines for Construction (PB-239-312/AS)
A set of 15 guidelines to help construction employers set up training in the safe use of equipment, tools, and machinery.

OSHA Safety and Health Training Guidelines for Maritime Operations (PB-239-311/AS)
Covers general longshoring operations.

Occupational Safety and Health—A Bibliography (PB-230-147)
Annotated bibliography of published sources dealing with both general and specific aspects of occupational safety and health, including a number of publications relating to training.

Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402

Principles and Practices of Occupational Safety and Health (A Programmed Instruction Course):
This self-study program is designed to help first-line supervisors to identify and correct or eliminate hazards found in the workplace. It consists of the following seven manuals, which can be ordered separately.

Administrator's Manual (OSHA 2211):
Contains duties and provides a checklist of tasks. (Order No. 029-015-00036-8)

Student Manual—Booklet One (OSHA 2213):
Contains an introduction to OSHAct, OSHA recordkeeping requirements, and practical exercises for the student. (Order No. 029-015-00037-6)

Student Manual—Booklet Two (OSHA 2214):
Discusses the role of the supervisor in the elimination of injuries and illnesses with particular stress on job hazard analysis. (Order No. 029-015-00038-4)

Student Manual—Booklet Three (OSHA 2215):
Teaches hazard analysis and gives examples of how hazards are controlled in certain industries. (Order No. 029-015-00039-2)

Student Manual—Booklet Four (OSHA 2216):
Discusses toxic materials, noise, airborne contaminants, lighting, and radiation, as well as their effects on the human body. Also covers personal protective equipment and its use, emergency care procedures, and fire loss control. (Order No. 029-015-00040-6)

Student Manual—Booklet Five (OSHA 2218):
Names sources of help for the supervisor in fulfilling safety and health responsibilities, and suggests ways to develop effective guidelines and goals. (Order No. 029-015-00042-2)

Student Manual—Booklet Six (OSHA 2217):
Describes techniques of communicating the contents of OSHAct to employees, concentrating on how and when to provide safety and health training. (Order No. 029-015-00041-4)

Instructor's Curriculum Plan for A Guide to Voluntary Compliance
Helps the instructor prepare a presentation of the OSHA course, "A Guide to Voluntary Compliance." (Order No. 029-015-00043-1) (See National Audiovisual Center list, on page 58 of this booklet, for this compliance course.)

Construction Safety and Health Training
Thirty-hour course, designed to train and educate supervisory personnel and employees in safe work practices on construction jobs, covers (in five manuals) all phases of construction safety and health.

Manual 301	Order No. 029-015-00018-0
Manual 302	Order No. 029-015-00019-8
Manual 303	Order No. 029-015-00020-1
Manual 304	Order No. 029-015-00021-0
Manual 305	Order No. 029-015-00022-8

U.S. Department of Labor
Regional Offices for Occupational Safety and Health

REGION I
(CT, ME, MA, NH, RI, VT)
16-18 North Street
Fourth Floor, 1 Dock Square
Boston, MA 02109
Telephone: (617) 223-6710

REGION II
(NY, NJ, PR, VI, CZ)
Room 3445, 1 Astor Plaza
1515 Broadway
New York, NY 10036
Telephone: (212) 944-3426

REGION III
(DE, DC, MD, PA, VA, WV)
Gateway Building—Suite 2100
3535 Market Street
Philadelphia, PA 19104
Telephone: (215) 596-1201

REGION IV
(AL, FL, GA, KY, MS, NC, SC, TN)
1375 Peachtree Street, N.W.
Suite 587
Atlanta, GA 30309
Telephone: (404) 881-3573

REGION V
(IL, IN, MN, MI, OH, WI)
230 South Dearborn Street
32nd Floor, Room 3263
Chicago, IL 60604
Telephone: (312) 353-2220

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555 Griffin Square, Room 602
Dallas, TX 75202
Telephone: (214) 767-4731

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(IA, KS, MO, NE)
911 Walnut Street, Room 3000
Kansas City, MO 64106
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Federal Bldg., Room 1554
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Denver, CO 80294
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